

## Commentor No. 1898: Daniel Anthony Herrera

## Response to Commentor No. 1898

### Draft PEIS Comment Form

I Daniel Anthony Herrera of the Parkrose Community oppose the restart of FFTF Nuclear at Hanford. How could you want to start up something that causes so much devastation and tragedy to so many innocent peoples lives. Do you really think our lives are expendable so you can go make your stupid plutonium or what ever you make. I will do whatever I can in my power to try and stop your irresponsibility.

1898-1

**1898-1:** DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1898-2

**1898-2:** This PEIS has provided an estimate of the incremental potential human health impacts associated with each of a range of reasonable alternatives (including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated each alternative analyzed and with restarting FFTF would be small. As stated in Appendix H of the EIS, other human health impacts (non-fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

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- calling toll-free and leaving your comments: 1-877-562-4593
- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): \_\_\_\_\_

Organization: \_\_\_\_\_

Home/Organization Address (circle one): \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

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Toll-free Telephone: 1-877-562-4593 • Toll-free Fax: 1-877-562-4592  
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## Commentor No. 1899: Jeanine

### Draft PEIS Comment Form

I oppose the restart of the FFTF nuclear reactor at Hanford. I think it's a very serious health problem. I don't want to have health problems down the line. I don't think it's right for people to put other people's life in jeopardy. I don't want to wake-up one day and have one of my friends dead because of the FFTF. Not only will you be risking the health of people, but you're risking the health of unborn babies. So to keep our health good, don't restart the FFTF.

From:

Jeanine

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- commenting via e-mail: NuclearInfrastructure-PEIS@hq.doe.gov

Name (optional): Jeanine

Organization:

Home/Organization Address (circle one): 4339 NE 133

City: Portland State: OR Zip Code: 97230

Telephone (optional):

E-mail (optional):

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7/12/00

## Response to Commentor No. 1899

1899-1

1899-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1899-2

1899-2: This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives (including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. As stated in Appendix H of the PEIS, other human health impacts (non-fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

## Commentor No. 1900: G. Andre Wade, II

## Response to Commentor No. 1900

### Draft PEIS Comment Form

Hello my name is G. Andre Wade II and I oppose the restart of the FFTF nuclear reactor at Hanford because I don't want to be subjected to nuclear radiation. In life I want to grow up have kids and a family with out having to deal with cancer or thyroid problems.

Thanks

G. Andre Wade II

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- commenting via e-mail: NuclearInfrastructure-PEIS@hq.doe.gov

Name (optional): G. Andre Wade II

Organization: Parkrose High School

Home/Organization Address (circle one): 34 NE Sacramento Apt B

City: Portland State: OR Zip Code: 97212

Telephone (optional): 280-0605

E-mail (optional): \_\_\_\_\_

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1900-1

1900-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1900-2

1900-2: This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives including the restart of FFTF for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. As stated in Appendix H of the PEIS, other human health impacts (non-fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

## Commentor No. 1901: Stephanie Rankin

### Draft PEIS Comment Form

I oppose the restart of the FFTF nuclear reactor at Hanford. Peoples lives, farm land, cattle, our water supply, and all living things are more important than your nuclear reactor. Your nuclear reactor will affect too many living things in not the right ways. You need to also think more about the health and safety of your employees. You have already killed and affected more than too many people.

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- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): Stephanie Rankin

Organization: \_\_\_\_\_

Home/Organization Address (circle one): \_\_\_\_\_

City: Portland State: OR Zip Code: 97220

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

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E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov



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## Response to Commentor No. 1901

1901-1

1901-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1901-2

1901-2: This PEIS has provided an estimate of the incremental potential human health impacts associated with each of a range of reasonable alternatives (including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small.

1901-3

The NI PEIS identifies (in Chapter 3 of Volume 1) endangered species that live on or near all of the candidate sites, as well as aquatic and wetlands areas that may be impacted by operations at candidate locations. According to an International Atomic Energy Agency (IAEA) publication (IAEA Technical Report Series No. 332, Effects of Ionizing Radiation on Plants and Animals at Levels Implied by Current Radiation Protection Standards), a dose rate of 100 millirem per year to the most exposed human will lead to dose rates to plants and animals of less than 0.1 rad per day. The IAEA concluded that a dose rate of 0.1 rad per day or less for animals and 1 rad per day or less for plants would not affect these populations. The largest individual dose for any of the nuclear infrastructure alternatives under normal operations would be less than 0.1 millirem, which is three orders of magnitude less than the IAEA threshold for adverse effects. Therefore, implementation of any of the range of reasonable nuclear infrastructure alternatives analyzed would not be expected to result in adverse impacts on plants and animals living in potentially affected areas around the candidate sites.

Worker safety (radiological protection) is a key element of DOE's Radiological Health and Safety Policy (DOE P 441.1, April 26, 1996). This policy states in part that DOE facilities must "conduct radiological operations in a manner that controls the spread of radioactive materials and reduces exposure to the workforce and the general public and that utilizes a process

### ***Commentor No. 1901: Stephanie Rankin (Cont'd)***

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### ***Response to Commentor No. 1901***

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that seeks exposure levels as low as reasonably achievable.” Each DOE site, including Hanford, is required to implement a radiological control program with the intent to meet this policy goal. Based on the assessment of worker health impacts for all of the alternatives and options that make use of Hanford facilities, the most likely impact of the use of these facilities is no increase in cancer fatalities among the facility workers. For example in Alternative 1 option 3, all of the activities target irradiation and processing) occur at Hanford facilities. As shown in Section 4.3.3.1.9, the expected consequences are less than one additional fatal cancer among the workforce; that is, no additional fatal cancers are expected.

**1901-3:** No food or water restrictions are in place outside the Hanford Reservation as a result of Hanford activities.

DOE worker and public health and safety are of paramount and primary importance to the Department. There have been no serious safety related accidents causing significant injury or harm to workers, or posing any threat or harm to the offsite public at FFTF during its lifetime. The environmental impacts associated with operation of the FFTF are addressed in detail in Section 4.3 of Volume 1 of the NI PEIS. The impacts are shown to be small. These impacts specifically include the risks to human health during normal operations and associated with postulated accidents. Over the 35-year operational period no fatalities would be expected among workers or in the general public in the vicinity of Hanford or at distant locations.

## Commentor No. 1902: Anonymous

### Draft PEIS Comment Form

I oppose the restart of the FFTF Nuclear reactor at Hanford. Because it's not right and we guys know it's not right, so why do people want to make people live all messed up and stuff it's going to make the environment dirty and it's going to kill most of our animals and fish and all the things that provide food for the community and all the good stuff like that, but most of all what make my family and I proud is that the people that's trying to open it back up they are the selfish people in the world, they doing it all because they need more money they're not thinking about all the people they are putting out work up doing or something.

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Name (optional): \_\_\_\_\_

Organization: \_\_\_\_\_

Home/Organization Address (circle one): \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

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7/12/00

## Response to Commentor No. 1902

1902-1

1902-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1902-2

1902-2: DOE notes the concern expressed in the comment on the potential health and environmental impacts of FFTF startup. All air emissions and wastewater discharges would be in accordance with applicable permit and regulatory requirements. The releases of air pollutants and contaminated liquid are addressed in Section 4.3 of the NI PEIS. The release of air pollutants would result in concentrations well below Federal and state air standards (Table 4-13). The release of radioactivity and hazardous chemicals into the atmosphere would have a negligible effect on human health (Tables 4-17 and 4-19, respectively). There would be no discernible impacts to groundwater or surface water quality (Section 4.3.1.1.4). All impacts on ecological resources, including animals and fish, associated with operation of the FFTF would be small (Section 4.3.1.1.6).

1902-3

It is concluded that operation of the FFTF would have small adverse effects on the environment.

1902-4

1902-3: DOE notes the commentor's views. Consistent with its mandates under the Atomic Energy Act, DOE seeks to maintain and enhance its infrastructure for the purposes of addressing three primary needs:

1) to support the need for increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;

2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and which the U.S. has no long-term, assured supply; and

3) to support civilian nuclear research and development needs in order to maintain the clean, safe, and reliable use of nuclear power as a viable component of the United States' energy portfolio. Section 1.2 of Volume 1 was revised to clarify the purpose and need of the proposed action.

***Commentor No. 1902: Anonymous (Cont'd)***

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***Response to Commentor No. 1902***

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**1902-4:** This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. As stated in Appendix H of the PEIS, other human health impacts (non-fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

## Commentor No. 1903: Carl Guinn, Jr.

### Draft PEIS Comment Form

My name is Carl Guinn JR and I oppose the restart of the FFTF nuclear reactor at Hanford. I plan on having kids some day and I don't want them to have problems and besides why do you want to open something that can hurt the Earth. The only thing this does is make peoples lifetime shorter

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- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): Carl Guinn JR

Organization: \_\_\_\_\_

Home/Organization Address (circle one): \_\_\_\_\_

City: Portland State: OR Zip Code: 97220

Telephone (optional): (503) 317-2523

E-mail (optional): \_\_\_\_\_

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7/12/00

## Response to Commentor No. 1903

1903-1

1903-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1903-2

1903-2: This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives including the restart of FFTF for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. As stated in Appendix H of the PEIS, other human health impacts (non fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

The PEIS identifies (in Chapter 3 of Volume 1) endangered species that live on or near all of the proposed sites, as well as aquatic and wetlands areas that may be impacted by operations at all of the proposed locations. According to an International Atomic Energy Agency (IAEA) publication (IAEA 1992), a dose rate of 100 millirem per year to the most exposed human will lead to dose rates to plants and animals of less than 0.1 rad per day. The IAEA concluded that a dose rate of 0.1 rad per day or less for animals and 1 rad per day or less for plants would not affect these populations. The largest individual dose for any of the alternatives evaluated is below 0.1 millirem, three orders of magnitude less than the IAEA identified threshold level. This is well below the IAEA benchmark. Therefore, all of the range of reasonable alternatives analyzed would have no effect on the plants and animals around the proposed sites.



## Commentor No. 1904: Ian Albers

### Draft PEIS Comment Form

I oppose the restart of the FFTF nuclear reactor at Hanford. The fact that you have even thought of re-opening the reactor is just crazy! I watched movies on this sorta thing and it's so horrible the kinds things that happen to people affected by the reactor. I want you to think about how you would feel if your baby dies because your neighbor the reactor, that you were assured was safe, contaminated your land and you can't go home and you can't survive.

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Name (optional): Ian Albers

Organization: Parkrose High School

(Home) Organization Address (circle one): 8631 NE Alberta

City: Portland State: OR Zip Code: 97220

Telephone (optional): 503-255-0474

E-mail (optional): Micstand5@aol.com

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E-mail: NuclearInfrastructure-PEIS@hq.doe.gov

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## Response to Commentor No. 1904

1904-1

1904-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1904-2

1904-2: This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. As stated in Appendix H of the EIS, other human health impacts (non fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

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# Commentor No. 1905: Raeleen Rambeau

## Draft PEIS Comment Form

To who it may concern,  
I oppose the restart of the FFTF nuclear reactor. I really don't want to die at a young age, and I don't want to live in pain. I don't want to see little kids all deformed running around. I don't want to see everyone around me dropping dead. So for me, and for you please don't restart the FFTF.

Sincerely,

Raeleen Rambeau

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- commenting via e-mail: NuclearInfrastructure-PEIS@hq.doe.gov

Name (optional): Raeleen Rambeau

Organization: Parkrose High School (PHS)

Home/Organization Address (circle one): \_\_\_\_\_

City: Portland, OR State: OR Zip Code: 97220

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

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## Response to Commentor No. 1905

1905-1

1905-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1905-2

1905-2: This PEIS has provided an estimate of the incremental potential human health impacts associated with each of a range of reasonable alternatives (including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. As stated in Appendix H of the PEIS, other human health impacts (non-fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

1905-1

## Commentor No. 1906: J. Sanders

### Draft PEIS Comment Form

I oppose the restart of the FFTF nuclear reactor at Hanford. We do not want any more birth defects and people and our animal population to die from cancer caused from radiation.

1906-1

1906-2

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- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): J. Sanders

Organization: \_\_\_\_\_

Home/Organization Address (circle one): \_\_\_\_\_

City: Portland State: OR Zip Code: 97220

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

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E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov



7/12/00

## Response to Commentor No. 1906

**1906-1:** DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

**1906-2:** This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. As stated in Appendix H of the EIS, other human health impacts (non fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

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# Commentor No. 1907: Joel R. Morsette

## Draft PEIS Comment Form

I oppose the restart of the FFTF nuclear reactor. I think it's messed up that you people care more about money than other people's lives. Whoever raised gas guys must not have had any values. You guys need to check your heads and get your values straight. How would you guys feel if your family members or friends had cancer or diseases from this power plant? I bet that you would think twice about it then.

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- calling toll-free and leaving your comments: 1-877-562-4593
- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: NuclearInfrastructure-PEIS@hq.doe.gov

Name (optional): Joel R. Morsette

Organization: RACE Alternative School

Home/Organization Address (circle one): 12312 NE Brazee St

City: Portland State: OR Zip Code: 97230

Telephone (optional): (503) 251-1263

E-mail (optional): X

COMMENTS MUST BE POSTMARKED BY September 18, 2000

For more information contact: Colette E. Brown, NE-50  
U.S. Department of Energy • 19901 Germantown Road • Germantown, MD 20874  
Toll-free Telephone: 1-877-562-4593 • Toll-free Fax: 1-877-562-4592  
E-mail: NuclearInfrastructure-PEIS@hq.doe.gov

7/12/00

## Response to Commentor No. 1907

1907-1

1907-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1907-2

1907-2: DOE notes the commentor's viewpoint. DOE is very concerned about the health and safety of the public and its workers. The NI PEIS provides an estimate of the incremental potential human health impacts associated with each of the alternatives proposed for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. The radiological risk has been determined to be low. In all cases, the analysis shows that the most likely impacts from the proposed actions are no additional cancer fatalities among the population surrounding the irradiation and processing facilities. See Chapter 4 and summary tables in Chapter 2 for the analysis results.

1907-3

1907-3: This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small.

## Commentor No. 1908: Shelly

### Draft PEIS Comment Form

I oppose the restart of FFTF nuclear reactor. Because we don't need the radiation hurting all the people and the animals.

1908-1

1908-2

#### There are several ways to provide comments on the Nuclear Infrastructure PEIS. These include:

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- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): Shelly

Organization: \_\_\_\_\_

Home Organization Address (circle one): 10415 NE Skidmore

City: Port State: OR Zip Code: 97220

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

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E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

7/12/00



## Response to Commentor No. 1908

**1908-1:** DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

**1908-2:** DOE notes the commentor's opposition to the restart of FFTF. This NI PEIS provides an estimate of the incremental potential human health impacts associated with each of the alternatives proposed (including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Over the 35-year operational period no fatalities would be expected among workers or in the general public in the vicinity of Hanford or at distant locations. [See for example Tables 4-17, 4-30, 4-41 etc. in chapter 4 and the summary Tables in Volume 1, Chapter 2 of the NI PEIS.]

The NI PEIS identifies (in Volume 1, Chapter 3) endangered species that live on or near all of the candidate sites, as well as aquatic and wetlands areas that may be impacted by operations at candidate locations. According to an International Atomic Energy Agency (IAEA) publication (IAEA Technical Report Series No. 332, Effects of Ionizing Radiation on Plants and Animals at Levels Implied by Current Radiation Protection Standards), a dose rate of 100 millirem per year to the most exposed human will lead to dose rates to plants and animals of less than 0.1 rad per day. The IAEA concluded that a dose rate of 0.1 rad per day or less for animals and 1 rad per day or less for plants would not affect these populations. The largest individual dose for any of the nuclear infrastructure alternatives under normal operations would be less than 0.1 millirem, which is three orders of magnitude less than the IAEA threshold for adverse effects. Therefore, implementation of the nuclear infrastructure alternatives would not be expected to result in adverse impacts on plants and animals living in potentially affected areas around the candidate sites.

Worker safety (radiological protection) is a key element of the DOE's Radiological Health and Safety Policy (DOE P 441.1, April 26, 1996). This policy states in part that DOE facilities must "conduct radiological operations in a manner that controls the spread of radioactive materials and reduces

***Commentor No. 1908: Shelly (Cont'd)***

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***Response to Commentor No. 1908***

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exposure to the workforce and the general public and that utilizes a process that seeks exposure levels as low as reasonably achievable.” Each DOE site, including Hanford, is required to implement a radiological control program with the intent to meet this policy goal. Based on the assessment of worker health impacts for all of the alternatives and options that make use of Hanford facilities, the most likely impact of the use of these facilities is no increase in cancer fatalities among the facility workers. For example in Alternative 1 option 3, all of the activities target irradiation and processing) occur at Hanford facilities. As shown in Table 4-42, the expected consequences are less than one additional fatal cancer among the workforce; that is, no additional fatal cancers are expected.

## Commentor No. 1909: Chairish Thomas

## Response to Commentor No. 1909

### Draft PEIS Comment Form

To whom it may concern,  
I oppose to restart of the FFTF nuclear  
reactor at Hanford, because it is killing  
everyone and everything that breathes  
air.

It would be extremely stupid  
to restart this, so think of how many  
animals we have extinct now &  
think of the number of animals and  
people you could kill. So don't be stupid.  
I think of the danger.

Sincerely

Chairish Thomas

#### There are several ways to provide comments on the Nuclear Infrastructure PEIS. These include:

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- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): Chairish Thomas

Organization: None

Home/Organization Address (circle one): 10339 DE Prescott

APT 303

City: Portland State: OR Zip Code: 97220

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

COMMENTS MUST BE POSTMARKED BY September 11, 2000

For more information contact: Colette E. Brown, NE-50  
U.S. Department of Energy • 19001 Germantown Road • Germantown, MD 20874  
Toll-free Telephone: 1-877-562-4593 • Toll-free Fax: 1-877-562-4592  
E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov



7/12/00

1909-1

1909-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1909-2

1909-2: This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives including the restart of FFTF for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small.

The PEIS identifies (in Chapter 3 of Volume 1) endangered species that live on or near all of the proposed sites, as well as aquatic and wetlands areas that may be impacted by operations at all of the proposed locations. According to an International Atomic Energy Agency (IAEA) publication (IAEA 1992), a dose rate of 100 millirem per year to the most exposed human will lead to dose rates to plants and animals of less than 0.1 rad per day. The IAEA concluded that a dose rate of 0.1 rad per day or less for animals and 1 rad per day or less for plants would not affect these populations. The largest individual dose for any of the alternatives evaluated is below 0.1 millirem, three orders of magnitude less than the IAEA identified threshold level. This is well below the IAEA benchmark. Therefore, all of the range of reasonable alternatives analyzed would have no effect on the plants and animals around the proposed sites.

# Commentor No. 1910: Jennifer Madewell

## Draft PEIS Comment Form

I oppose the restart of the FFTF reactor at Hanford. This is a very bad idea. This reaction will kill so many innocent people just think how many unborn babies and newborn babies will have serious health problems and possible die. This will cause an epidemic of health problems. I strongly believe the FFTF should not be restarted.

Sincerely,

Jennifer Madewell

Jennifer E. Madewell

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- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): Jennifer Madewell

Organization: PACE

Home/Organization Address (circle one): 4815 N.E. 110th

City: Portland State: OR Zip Code: 97220

Telephone (optional):

E-mail (optional):

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E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

7/12/00

## Response to Commentor No. 1910

1910-1

1910-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

1910-2

1910-2: The commentor's position regarding restart of FFTF is noted. This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives, including the restart of FFTF, for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. As stated in Appendix H of the EIS, other human health impacts (non-fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

1910-1



## Commentor No. 1911: Kayla Grow

## Response to Commentor No. 1911

## Draft PEIS Comment Form

9/14/00

To whom it may concern

There are too many reasons why you should NOT restart the FFTF to even consider putting thousands of people in such great danger is immoral. Also please think of the kids you'll be infecting. It's not a good idea.

Sincerely,

Kayla Grow

Kayla Grow

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- calling toll-free and leaving your comments: 1-877-562-4593
- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: NuclearInfrastructure-PEIS@hq.doe.gov

Name (optional): Kayla Grow

Organization: PACE

Home/Organization Address (circle one): 18800 nesandy

Apt. 31

City: Portland State: OR Zip Code: 97230

Telephone (optional): 503-258-8489

E-mail (optional):

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For more information contact: Colette E. Brown, NE-60  
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Toll-free: 1-877-562-4593 • Fax: 1-877-562-4592  
E-mail: NuclearInfrastructure-PEIS@hq.doe.gov

7/12/00



1911-1

**1911-1:** This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks (including the risks to children) associated with restarting FFTF would be small. As stated in Appendix H of the EIS, other human health impacts (non-fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

1911-2

**1911-2:** DOE notes the commentor's opposition to Alternative 1, Restart FFTF.

**Commentor No. 1912: Ann Sanders/Lewis W. Cornwell**

sept 14 2000

U.S. Dept of Energy  
19901 Germantown Rd  
Germantown, MD 20874

Dear Mr. Brown:

We urge you to shut down the FFTF reactor. We don't want any more radioactive fuel brought into our state, nor do we want more radioactive waste produced. We certainly don't want any more accidents. The D.O.E.'s lack of disclosure to our public regarding the Plutonium emissions into the air during the recent brushfire is one more piece of evidence to add the already weighty body of evidence that no one (public or private) is capable of regulating these toxic elements safely continuously or with integrity.

Sincerely,  
Ann Sanders  
Lewis W. Cornwell

1912-1

1912-2

1912-3

1912-4

1912-5

**Response to Commentor No. 1912**

- 1912-1:** DOE notes the commentor's support for Alternative 5, Permanently Deactivate FFTF.
- 1912-2:** DOE notes the commentor's concerns about bringing radioactive fuel into the state. Use of the FFTF to support the proposed action would require, after onsite fuel was spent (approximately 6 years of operation), domestic highly enriched uranium fuel or foreign mixed-oxide fuel to be transported to Hanford. However, the radioactivity of this incoming fuel is relatively low. The potential impacts associated with transportation activities to support the proposed action are addressed in Chapter 4, Volume 1 and Appendix J, Volume 2 of the NI PEIS.
- 1912-3:** DOE notes the commentor's concern regarding wastes. The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed action for all alternatives and alternative options. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.
- 1912-4:** FFTF can be safely operated to support the nuclear infrastructure missions described in Section 1.2 of Volume 1. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1, including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small.
- 1912-5:** No radioactive materials were "released" in the Hanford Wildfires of 2000. Wildfires did resuspend some materials already in the environment. The resuspended materials were low, slightly above natural background levels. The low levels required several days of analysis to quantify. Very low, environmental levels are not detectable with real-time measurement techniques. Monitoring results were reported to the public as they became available.

# Commentor No. 1913: Barbara Z. Rogers

# Response to Commentor No. 1913

## Draft PEIS Comment Form

RE-START THE FFTF!!!!

1913-1

1913-1: DOE notes the commentor's support for Alternative 1, Restart FFTF.

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- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): BARBARA Z. ROGERS

Organization: \_\_\_\_\_

(Home) Organization Address (circle one): 1108 N. R.D. 36

PARCO WA 99301

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

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For more information contact: Colette E. Brown, NE-50  
U.S. Department of Energy • 19501 Germantown Road • Germantown, MD 20874  
Toll-free Telephone: 1-877-562-4593 • Toll-free Fax: 1-877-562-4592  
E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov



7/12/00

NUCLEAR INFRASTRUCTURE PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT



**Commentor No. 1914: J. M. Fritzman**  
**Lewis and Clark College**

**Draft PEIS Comment Form**

The Fast Flux Test Facility at Hanford should not be restarted. It should be shut down and decommissioned permanently. The FFTF is not needed for the production of medical isotopes, for NASA, or any other reason. It is an environmental accident waiting to happen. Adding more nuclear waste will only increase the risk and make more difficult the problems of nuclear waste disposal. Both President Carter and President Reagan ordered the cancellation of the breeder program. With that program gone, there is no rational purpose for the FFTF. The FFTF should not be restarted. It should be shut down.

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- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): J. M. Fritzman  
 Organization: Lewis & Clark College - Philosophy Department  
 Home/Organization Address (circle one): 6615 SW Palatine Hill Road  
 City: Portland State: OR Zip Code: 97219  
 Telephone (optional): \_\_\_\_\_  
 E-mail (optional): fritzman@lclark.edu

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For more information contact: Colette E. Brown, NE-60  
 U.S. Department of Energy • 19901 Germantown Road • Germantown, MD 20874  
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 E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

7/12/00

**Response to Commentor No. 1914**

1914-1

1914-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF, and support for Alternative 5, Permanently Deactivate FFTF.

1914-2

1914-2: See response to comment 1914-1.

1914-3

1914-3: DOE notes the commentor's opposition to restarting FFTF for expanding its existing nuclear facility infrastructure. DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual growth of medical isotope use has tracked at levels consistent with the Expert Panel findings. Section 1.2.1 of Volume 1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

1914-4

1914-5

1914-3

1914-1

1914-2

Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Although research to identify other potential fuel sources to support these space exploration missions has been conducted, no viable

***Commentor No. 1914: J. M. Fritzman (Cont'd)***  
***Lewis and Clark College***

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***Response to Commentor No. 1914***

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alternative to using plutonium-238 has been established. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Without an assured domestic supply of plutonium-238, DOE's ability to support future NASA space exploration missions may be lost. Section 1.2.2 of Volume 1 was revised to further clarify the purpose and need for reestablishing a domestic plutonium-238 production capability to support NASA space exploration missions.

In January 1997, President Clinton tasked his Committee of Advisors on Science and Technology (PCAST) to evaluate the current national energy research and development portfolio and to provide a strategy that ensures the United States has a program to address the Nation's energy and environmental needs for the next century. In its November 1997 report responding to this request, the PCAST Energy Research and Development Panel determined that restoring a viable nuclear energy option to help meet our future energy needs is important and that a properly focused research and development effort to address the potential long-term barriers to expanded use of nuclear power (e.g., nuclear waste, proliferation, safety, and economics) was appropriate. The PCAST panel further recommended that DOE reinvigorate its nuclear energy research and development activities to address these potential barriers. Section 1.2.3 provides information on the nuclear energy research and development mission.

The Fast Flux Test Facility was not designed to be a breeder reactor. It was originally intended to support production of nuclear fuel for use in breeder reactors; however, it will not be used for this purpose, if restarted. There is no breeder reactor program in the United States at this time.

- 1914-4:** The environmental impacts associated with operation of the FFTF and support facilities at Hanford during normal operations and from postulated accidents are presented and discussed in Section 4.3 of the NI PEIS. All impacts to human health and to ecological resources would be small in the immediate area of the Hanford site and negligible at all distant locations.
- 1914-5:** DOE notes the commentor's concern regarding wastes. The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed action for all alternatives and alternative options. Waste minimization programs at each of the

***Commentor No. 1914: J. M. Fritzman (Cont'd)***  
***Lewis and Clark College***

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***Response to Commentor No. 1914***

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proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.

**Commentor No. 1915: William A. Rottschaef**  
**Lewis and Clark College**

**Draft PEIS Comment Form**

I believe that  
 (1) the FFTF reactor should not be restarted  
 (2) It should be shut down permanently

1915-1

**1915-1:** DOE notes the commentor's opposition to Alternative 1, Restart FFTF, and support for Alternative 5, Permanently Deactivate FFTF.

1915-2

**1915-2:** See response to comment 1915-1.

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- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): William A. Rottschaef

Organization: Department of Philosophy

Home/Organization Address (circle one): Lewis & Clark College

City: Portland State: OR Zip Code: 97219

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

↓ COMMENT PERIOD EXTENDED

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 E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov



7/12/00

**Response to Commentor No. 1915**

## Commentor No. 1916: Susan Kay Donaldson

10311 Park Avenue South  
Tacoma, Washington 98444-5857  
15 September 2000

Colette E. Brown  
NE-50  
U.S. Department of Energy  
19901 Germantown Road  
Germantown, Maryland 20874

re: Hanford nuclear facilities

Dear Ms. Brown:

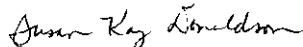
I am writing to express my fears of renewed production activities at the highly contaminated Hanford plant and my opposition to such renewal.

The Fast Flux Test Facility should simply be shut down—for the safety of the people of the immediate area, for the safety of the people of Washington, for the present and long-term safety of the earth.

We on the earth are all one people. No nation has the right to endanger all the planet, as nuclear waste does. There can be no arguments, in my opinion, that outweigh our communal responsibilities to preserve the earth for other human beings. Our forays into nuclear bombs and power have already created huge amounts of waste, whose half-lives are far longer than written human history.

Therefore, please simply shut down the Fast Flux Test Facility and continue with the clean-up there.

Yours sincerely,



Susan Kay Donaldson

c: S. Gorton  
P. Murray  
A. Smith  
R. Yarrow

|| 1916-1  
|| 1916-2

|| 1916-3

|| 1916-1 || 1916-4

## Response to Commentor No. 1916

**1916-1:** DOE notes the commentor's support for Alternative 5, Permanently Deactivate FFTF.

**1916-2:** This PEIS has provided an estimate of the incremental potential human health impacts associated with a range of reasonable alternatives including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. As stated in Appendix H of the EIS, other human health impacts (non fatal cancers and genetic mutations) occur with a lower frequency for the same level of exposure to low levels of radiation. Since the most likely impact on the population from all of the alternatives is no additional fatalities, it follows that the expected result for these other health impacts is no additional impact.

The PEIS identifies (in Chapter 3 of Volume 1) endangered species that live on or near all of the proposed sites, as well as aquatic and wetlands areas that may be impacted by operations at all of the proposed locations. According to an International Atomic Energy Agency (IAEA) publication (IAEA 1992), a dose rate of 100 millirem per year to the most exposed human will lead to dose rates to plants and animals of less than 0.1 rad per day. The IAEA concluded that a dose rate of 0.1 rad per day or less for animals and 1 rad per day or less for plants would not affect these populations. The largest individual dose for any of the alternatives evaluated is below 0.1 millirem, three orders of magnitude less than the IAEA identified threshold level. This is well below the IAEA benchmark. Therefore, all of the range of reasonable alternatives analyzed would have no effect on the plants and animals around the proposed sites.

Chapter 4 of Volume 1 of the PEIS provides a comprehensive assessment of the environmental consequences of each of the proposed alternatives. (The results of these assessments are also summarized in Chapter 2.) These analyses include assessments of the impacts on land resources,



***Commentor No. 1916: Susan Kay Donaldson (Cont'd)***

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***Response to Commentor No. 1916***

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water resources, air quality, geology and soils (in addition to the human health impacts discussed in the preceding paragraph). For the alternatives that consider the use of facilities at Hanford, the environmental impact on all of these resources is negligible.

**1916-3:** The commentor's positions on nuclear waste are noted. The missions described in Section 1.2 of Volume 1 are unrelated to the national defense and none are concerned with the production of nuclear weapons. Chapter 4 of Volume 1 (e.g. 4.3.1.1.13, 4.3.2.1.13, 4.3.3.1.13) describes the generation and disposition of nuclear waste that would occur under implementation of the alternatives described in Section 2.5 of Volume 1.

**1916-4:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing activities to remediate existing contamination at Hanford are high priority to DOE. The Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. The DOE missions delineated in the NI PEIS would not have an impact on Hanford cleanup activities.

# Commentor No. 1917: E. Benoth

## Draft PEIS Comment Form

The FFTF reactor  
should not be restarted.

It should be shut down.

Clean up and safety  
should be #1 priorities.

Thank you.

I am speaking for  
my children and the  
next generations.

### There are several ways to provide comments on the Nuclear Infrastructure PEIS. These include:

- attending public meetings and giving your comments directly to DOE officials
- returning this comment form to the registration desk at the meeting or to the address below
- calling toll-free and leaving your comments: 1-877-562-4593
- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): E. Benoth

Organization: \_\_\_\_\_

Home/Organization Address (circle one): \_\_\_\_\_

186 Swindlers Ferry Court

City: Portland State: OR Zip Code: 97209

Telephone (optional): \_\_\_\_\_

E-mail (optional): \_\_\_\_\_

COMMENTS MUST BE POSTMARKED BY September 18, 2000

For more information contact: Colette E. Brown, NE-50  
U.S. Department of Energy • 19901 Germantown Road • Germantown, MD 20874  
Toll-free Telephone: 1-877-562-4593 • Toll-free Fax: 1-877-562-4592  
E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov



7/12/00

## Response to Commentor No. 1917

1917-1

1917-1: DOE notes the commentor's opposition to Alternative 1, Restart FFTF, and support for Alternative 5, Permanently Deactivate FFTF.

1917-2

1917-2: See response to comment 1917-1.

1917-3

1917-3: DOE notes the commentor's concern regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing activities to remediate existing contamination at Hanford are high priority to DOE. The Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. The DOE missions delineated in the NI PEIS would not have an impact on Hanford cleanup activities.

DOE worker and public health and safety are of paramount and primary importance to the Department.

The environmental impacts associated with operation of the FFTF and support facilities at Hanford during normal operations and from postulated accidents are presented and discussed in Section 4.3 of Volume 1 of the NI PEIS. All impacts to human health and to ecological resources would be small in the immediate area of the Hanford Site and negligible at all distant locations.

## Commentor No. 1918: Barbara A. Scott

Barbara A. Scott  
75 Benton Way  
San Luis Obispo, California 93405  
(805) 544-8883

Collete E. Brown  
US Dept of Energy  
NE-50  
19901 Germantown Rd.  
Germantown, MD 20874  
(877) 562-4592

September 12, 2000

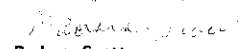
Dear Ms. Brown,

I am writing to request that NASA be required to develop alternative (solar) power sources for space missions. The technology is workable and has been developed in Europe.

I strongly feel the current path of increased Plutonium production is not justified by the health risks to workers or the safety risks to the public at large. Nor is the astronomical costs of plu-238 which drains the economy for decades to come.

Please push forward a space program that our country can be proud of and will not increase possibilities for massive environmental pollution of our earth.

Sincerely,

  
Barbara Scott

1918-1

1918-2

1918-3

1918-1

## Response to Commentor No. 1918

**1918-1:** DOE notes the commentor's concern for NASA's use of nuclear materials for space missions and interest in the development of alternative energy sources for space missions, although issues such as NASA research priorities are beyond the scope of this PEIS. Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. These radioisotope power systems have been used for almost 40 years, and have repeatedly demonstrated their performance, safety, and reliability in various NASA space missions. NASA establishes the need and requirements for space missions and undergoes a thorough NEPA evaluation for each launch.

**1918-2:** Worker safety (radiological protection) is a key element of the DOE's Radiological Health and Safety Policy (DOE P 441.1, April 26 1996) This policy states in part that DOE facilities must "conduct radiological operations in a manner that controls the spread of radioactive materials and reduces exposure to the workforce and the general public and that utilizes a process that seeks exposure levels as low as reasonably achievable." Each DOE site, including Hanford, is required to implement a radiological control

***Commentor No. 1918: Barbara A. Scott (Cont'd)***

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***Response to Commentor No. 1918***

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program with the intent to meet this policy goal. Based on the assessment of worker health impacts for the range of reasonable alternatives and options that make use of Hanford facilities, the most likely impact of the use of these facilities is no increase in cancer fatalities among the facility workers. For example in Alternative 1 option 3, all of the activities (target irradiation and processing) occur at Hanford facilities. As shown in Section 4.3.3.1.9 the expected consequences are less than one additional fatal cancer among the workforce; that is, no additional fatal cancers are expected.

This PEIS has provided an estimate of the incremental potential human health impacts associated with each of the alternatives proposed including the restart of FFTF) for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems. The methodology used is intended to provide realistic results based upon our current knowledge of the health impact of low doses of radiation. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small.

**1918-3:** DOE notes the commentor's concern regarding the cost of expanded plutonium-238 production. However, the costs of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS.

## Commentor No. 1919: David B. Robbins

## Response to Commentor No. 1919

### Draft PEIS Comment Form

\*I REMEMBER THESE COMMENTS ARE LATE, FOR WHICH I APOLOGIZE.\*  
 FIRST, LET ME SAY THAT I CONSIDER MYSELF A STRONG ENVIRONMENTALIST. THAT BEING SAID, I STRONGLY BELIEVE THAT THE PETP SHOULD BE RESTARTED FOR THE FOLLOWING REASONS: 1) THERE IS AN URGENT NEED FOR THE THERAPEUTIC ISOTOPES THAT ONLY THE PETP CAN PRODUCE IN MEMORABLE QUANTITIES, 2) PU-238 IS NEEDED FOR STELLING CYCLE GENERATORS FOR NASA'S DEEP-SPACE EXPLORATION VEHICLES, A MOST IMPORTANT PROGRAM, 3) THE UNITED STATES NEEDS TO CONDUCT FAR MORE RESEARCH ACTIVITIES RELATED TO NUCLEAR POWER THAN WE DO CURRENTLY, WE SEVERELY LAG MANY OTHER COUNTRIES IN THIS FIELD.

I WOULD ALSO LIKE TO SAY THAT THE ANTI-NUCLEAR ANTI-PETP GROUPS, AS EXEMPLIFIED BY HEART OF AMERICA NORTHWEST, MAKE ME SICK WITH THEIR LIES AND DISTORTIONS (AND HALF-TRUTHS!) USDOE SHOULD CUT OFF THEIR FUNDING; IT'S A GRASS WASTE OF MY TAX DOLLARS! FINALLY, I THOUGHT USDOE, ESPECIALLY MS. COLETTE BROWN, CONDUCTED ITSELF VERY PROFESSIONALLY AT THE SEATTLE MEETING, SHOWING GREAT RESPECT FOR THE VIEWS OF THE PUBLIC (AND GREAT RESPECT WITH THE LIES OF GERALD PILLETT!)

SINCERELY

David B. Robbins  
 9/15/2000

There are several ways to provide comments on the Nuclear Infrastructure PEIS. These include:

- attending public meetings and giving your comments directly to DOE officials
- returning this comment form to the registration desk at the meeting or to the address below
- calling toll-free and leaving your comments: 1-877-562-4593
- faxing your comments toll-free to: 1-877-562-4592
- commenting via e-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov

Name (optional): DAVID B. ROBBINS

Organization: \_\_\_\_\_

Home Organization Address (circle one): 15138 STONE LANE N. AP: B506

City: SHARPELAVE State: VA Zip Code: 98133-6282

Telephone (optional): 206-361-9618

E-mail (optional): \_\_\_\_\_

COMMENTS MUST BE POSTMARKED BY September 11, 2000

For more information contact: Colette E. Brown, NE-50  
 U.S. Department of Energy • 19901 Germantown Road • Germantown, MD 20874  
 Toll-free Telephone: 1-877-562-4593 • Toll-free Fax: 1-877-562-4592  
 E-mail: Nuclear.Infrastructure-PEIS@hq.doe.gov



7/12/00

1919-1

1919-1: DOE notes the commentor's support for Alternative 1, Restart FFTF.

1919-2: DOE notes the commentor's views regarding anti-nuclear groups and appreciation for DOE's conduct at the Seattle, Washington public hearing.

1919-2

## Commentor No. 1920: Barbara A. Walton

85 North Claymore Lane  
Oak Ridge, TN 37830  
September 15, 2000

Ms. Collette E. Brown, NE-50  
Office of Nuclear Energy, Science and Technology  
U. S. Department of Energy  
19901 Germantown Road  
Germantown, MD 20874

Subject: Draft Programmatic Environmental Impact Statement (PEIS) for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility (FFTF) [DOE/EIS-0310D, July 2000]

Dear Ms. Brown:

I will refer to the subject document in the remainder of this letter as the Nuclear Infrastructure (NI) PEIS. I received the Cost Report for Alternatives Presented in the NI PEIS on September 1 and the NI Nonproliferation Impact Assessment (DOE/NE-D119) on September 12. Even though the time frame was short, I have considered the material in them in preparing these comments:

1. The requirement for this action is fuzzy at best, a stronger case should be made. It now sounds like an excuse to restart FFTF. In addition, future isotope demand should be bounded by a low and a high estimate. Existing facilities at INEEL and ORNL are NOT considered for the Medical and Industrial Isotopes Production and Nuclear Research and Development Mission. See Table 2-1 (page 2-3) or Table S-1 (page S12). This is, in my opinion, the worst flaw in this document. Please correct this in the Final PEIS!
  2. Alternative 5 and the No Action Alternative must be rejected as unresponsive to the needs of the nation as well as for reason of nonproliferation concerns. As a NASA retiree, I recognize the importance of Pu-238 for future space exploration. An assured, domestic supply is preferable. Medical needs are discussed below.
  3. Alternative 1 must be rejected for reasons of cost and equity. From the scoping meetings, it seems that most folks in the Northwest do NOT want the FFTF restarted. Promises were made about the future use of this area; therefore, these wishes should be honored. Additionally, the surrounding area is now a National Monument (Hanford Reach). Since folks in Idaho and Tennessee are generally supportive of the production of Pu-238 for future space missions and of the production of medical isotopes, it is also unnecessary to select this alternative.
  4. Alternative 3 should be rejected for reasons of cost and unsuitability for many isotopes.
  5. Alternative 4 should be considered only as a long-term solution.
  6. The best solution is to expand the scope of Alternative 2 and select it for the near term. The expansion of alternative 2, upgrading existing facilities, namely HFIR in Oak Ridge and ATR at INEEL, is the most cost-effective option. ATR can be modified to produce short-lived medical isotopes by addition of a rabbit system. HFIR can be upgraded to its full design power of 100 megawatts easily and quickly.
- INEEL, in partnership with I4, and ORNL are currently producing medical isotopes, as noted in pages 2-19 thru 2-23. ORNL also has potential for commercial/government partnership for such production. This has cost saving potential. An additional advantage for isotope production at ORNL is location, with a nearby transportation hub (UPS in Nashville) as well as the proximity of a high percentage of isotope users (East Coast population centers).
7. The REDC is the only Pu-238 Target Fabrication and Processing Facility that is currently operational (Table 7-1, page 7-1 in the NI Nonproliferation Impact Assessment). Use of CLWR requires additional cost to produce stainless steel-clad targets. Therefore Options 7 and 1 of Alternative 2 should be preferred.

Additional comments are attached. Please include me in your distribution of the Final PEIS and ROD.  
Sincerely,

*Barbara A. Walton*

Barbara A. Walton  
bwalton@cornet.org

## Response to Commentor No. 1920

1920-1

**1920-1:** DOE notes the commentor's views. Consistent with its mandates under the Atomic Energy Act, DOE seeks to maintain and enhance its infrastructure for the purposes of addressing three primary needs:

1920-2

1) to support the need for increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;

1920-3

2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and which the U.S. has no long-term, assured supply; and

3) to support civilian nuclear research and development needs in order to maintain the clean, safe, and reliable use of nuclear power as a viable component of the United States' energy portfolio. Section 1.2 of Volume 1 was revised to clarify the purpose and need of the proposed action.

While some existing reactors, such as ATR at INEEL and HFIR at ORNL, may possess the potential capability or capacity to support medical and industrial isotope production and/or nuclear research and development missions, it is unlikely that reliable, increased support of these missions to the extent needed to fulfill projected needs could be accomplished without disturbing the existing missions of these facilities.

## Commentor No. 1920: Barbara A. Walton (Cont'd)

Page 2 Barbara A. Walton

### Additional comments:

a. The addition of Commercial Light Water Reactor (CLWR) to Alternative 2 since the Pu-238 Production Scooping Meetings is noted; this is a good change.

b. Table 4-155 on page 4-307 is misleading. Several of these decisions have already been made so some of the X's should be removed. For example, line 1 SRS was chosen so delete X from INEEL and Hanford. Likewise line 4, INEEL & SRS were chosen for SNF -- delete X for ORR and Hanford.

c. For Section 4.8, Cumulative Impacts, an estimate of the impacts for Alternatives 3 & 4 for the three sites concerned in this action would be helpful while recognizing that a future EIS would still be needed. This is because the bounding case for ORR (option 7, Alternative 2) and INEEL (option 2, Alternative 2) do NOT include isotope production.

d. The ORNL facilities under consideration were designed to produce medical isotopes. In fact, the origination of isotope production and distribution was at ORNL. It has continued involvement; however, the volume diminished when competition with the private sector became contrary to DOE policy.

e. You may remember the related 1996 EIS for the production of Molybdenum-99. The ROD selected the Annular Core Research Reactor (ACRR) and Hot Cell Facility at Sandia National Laboratory in Los Alamos and the Chemistry and Metallurgy Research facility at Los Alamos National Laboratory. Facilities in Oak Ridge and Idaho were not seriously considered. The ACRR is shown in Table 2-4 as fully dedicated to existing missions. Guess what! In response to questions at the 8/28 meeting, I found out that they never produced any Mo-99 but have been producing I-131. This is, in part, my reason for stating in item 1 on the previous page that this action appears to be an excuse to restart FFTF -- your track record appears to be highly influenced by politics.

1920-4

1920-5

## Response to Commentor No. 1920

**1920-2:** DOE notes the commentor's support for Alternative 2, Use Only Existing Operational Facilities with the upgrade of HFIR and ATR, for the near term and Alternative 4, Construct New Research Reactor, for the long term and her opposition to all other alternatives, including the No Action Alternative.

**1920-3:** See response to comment 1920-2.

**1920-4:** The table is being changed to reflect the commentor's observations.

The commentor's concern regarding the cumulative impacts at ORR and INEEL is noted. However, as stated in Section 4.8.5 and 4.8.6 of the NI PEIS, site specific cumulative analyses would be prepared for Alternative 3 (New Accelerator(s) and Support Facility) or Alternative 4 (New Reactor and Support Facility) only if either of these alternatives were selected for implementation. Prior to those analyses, however, siting studies would be prepared to identify the preferable locations for the various facilities. The specific locations so identified would affect the magnitude of impacts associated with their operations. Only then could assessments be performed that would be of comparable accuracy to those presented in the PEIS for the existing facilities at Oak Ridge and INEEL.

In addition to the above, the cumulative impacts presented in Section 4.8 are based on the impacts that have been evaluated earlier in Chapter 4, to which are added existing site impacts and impacts from reasonably foreseeable actions. However, for Oak Ridge and INEEL, impacts associated with the production of medical and industrial isotopes and with research and development activities have not been evaluated in the earlier Chapter 4 sections because the action alternatives assessed (Alternatives 1 through 4) call only for plutonium-238 production at those sites.

**1920-5:** DOE notes the commentor's views. As discussed in Volume 1, Section 1.7 of the NI PEIS, the "Final Environmental Impact Statement, Medical Isotopes Production Project: Molybdenum-99 and Related Isotopes" analyzed the proposed establishment of a domestic capability to produce molybdenum-99 and related medical isotopes such as iodine-131, xenon-133, and iodine-125. At the time this review was conducted, the U.S. supply of molybdenum-99 depended on the production capacity of one aging reactor in Canada, so DOE proposed this action to ensure a

***Commentor No. 1920: Barbara A. Walton (Cont'd)***

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***Response to Commentor No. 1920***

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reliable domestic source for this vital isotope. The range of reasonable alternatives evaluated in this EIS included facilities at SNL, LANL, ORNL, and INEEL. In the subsequent Record of Decision, DOE selected the ACRR and the Hot Cell Facility at SNL for the production of molybdenum-99 and the related isotopes, with target fabrication to be conducted at LANL. However, since that time, the diversity and reliability of world supply of molybdenum-99 have increased. DOE has determined that, because the vulnerability in supplies of molybdenum-99 has sufficiently diminished, the selected SNL facilities should be further developed for molybdenum-99 production using private funds. Negotiations toward that end are ongoing. Until an agreement is reached, the reactor and hot cell facilities are available for emergency molybdenum-99 production should the need arise. The reactor is also being used for the production of other isotopes, for example iodine-125, and has been made available on a services basis to serve defense missions. As such, the ACRR is currently configured to support DOE Office of Defense Programs pulse testing missions. This configuration is compatible with reactor operations for the production of some isotopes.



## Commentor No. 1921: Gary Bickett

September 11, 2000

Colette E. Brown, NE-50  
Office of Nuclear Energy, Science and Technology  
US Department of Energy  
19901 Germantown Road  
Germantown, MD 20874

Re: Hanford FFTF Restart

Ms. Brown:

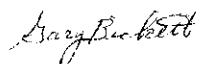
I can not find strong enough adjectives to express how much I oppose the restart of the Fast Flux Test Facility located at the Hanford Nuclear Reservation in the State of Washington! Your reasons for needing to restart this facility are not credible as the materials it would produce can be either produced else where or purchased on the international market. Our lives have been negatively impacted enough from the idiotic past practices at this site. We are sick and tired of the slick side shows and half truths! We're real people here -- quit treating us like we're not! Enough is enough!!

It's time your Department makes a complete change in it's policies and goals. Get on with trying to clean up this ridiculous mess we have been left with as Hanford is one of the most contaminated sites on this planet. The Draft EIS for the restart of the FFTF is inadequate. It fails to properly address the waste issue if it was to go into production. The last thing we need is to generate more low and high level nuclear waste!

If you need more to do spend your time and resources developing and encouraging the development of alternative energy sources other than fossil fuels and nuclear power. Much of it is already available it just needs commitment on the part of the federal government.

I am not normally this antagonistic towards government agencies and am not one of those anti government extremist or even close. But I and many others have a complete lack of trust with your agency. We have been deceived too many times. Please restore your credibility and do the right thing. Listen to common sense and the majority of the public who care about this planet. Choose alternative 5 and permanently deactivate FFTF.

Sincerely,



Gary Bickett  
15105 Twin Fir Road  
Lake Oswego, OR 97035

## Response to Commentor No. 1921

**1921-1:** DOE notes the commentor's opposition to Alternative 1, Restart FFTF, and support for Alternative 5, Permanently Deactivate FFTF.

**1921-2:** The United States currently purchases approximately 90 percent of its medical radioisotopes from foreign producers, most notably Canada. However, Canada only supplies a limited number of economically attractive commercial isotopes (primarily Molybdenum-99), and it does not supply research isotopes or the diverse array of medical and industrial isotopes considered in the NI PEIS. Further, supplies of many research isotopes are not readily available from existing foreign or domestic sources, causing a number of medical research programs to be terminated, deferred, or seriously delayed. As such, reliance on these other sources of isotopes to satisfy projected U.S. isotope needs would not meet DOE's mission requirements. Section 1.2.1 of Volume 1 has been revised to clarify DOE's isotope production role and other producers' capabilities to fulfill U.S. isotope needs.

DOE could purchase plutonium-238 from Russia; however, for supply reliability reasons and concern of nuclear nonproliferation, DOE's preference is to establish a domestic plutonium-238 production capability. Section 1.2.2 of Volume 1 was revised to further clarify the purpose and need for reestablishing a domestic plutonium-238 production capability to support NASA space exploration missions

**1921-3:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing activities to remediate existing contamination at Hanford are high priority to DOE. The Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. The DOE missions delineated in the NI PEIS would not have an impact on Hanford cleanup activities.

The environmental impacts associated with operation of the FFTF are addressed in Section 4.3 of Volume 1 of the NI PEIS. The impacts are shown to be small. These impacts specifically include the risks to human health during normal operations and associated with postulated accidents. Over the 35-year operational period no fatalities would be expected

1921-1

1921-2

1921-3

1921-4

1921-5

1921-6

1921-7

## ***Commentor No. 1921: Gary Bickett (Cont'd)***

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## ***Response to Commentor No. 1921***

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among workers or in the general public in the vicinity of Hanford or at distant locations.

Steady and consistent progress in restoring the Hanford Site is documented in annual reports. These are available at [www.hanford.gov](http://www.hanford.gov).

- 1921-4:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

As identified in Section 4.3.1.1.13 of the NI PEIS, the restart of FFTF would generate about 63 cubic meters of additional radioactive waste (e.g., solid low-level radioactive waste) annually, in addition to nonhazardous wastes. This would account for about 2,205 cubic meters of additional radioactive waste to be generated over the 35-year period of nuclear infrastructure operations and is small in comparison to the waste generated by current Hanford activities. High-level radioactive waste would not be generated from merely operating FFTF. It is DOE's policy that all wastes be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.

The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed action for all alternatives and alternative options. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision.

- 1921-5:** DOE notes the commentor's interest in alternative energy sources. It is the current United States policy that clean, safe, reliable nuclear power continue as a viable component of the United States' energy portfolio. In recognition of this need, the government has initiated nuclear energy

***Commentor No. 1921: Gary Bickett (Cont'd)***

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***Response to Commentor No. 1921***

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research and development programs to address potential long-term barriers to expanded use of nuclear power (e.g., nuclear waste, proliferation, safety, and economics) and to ensure that current nuclear power plants can continue to deliver adequate and affordable energy supplies. An enhanced DOE nuclear facility infrastructure is required to support such nuclear energy research and development for civilian applications.

**1921-6:** DOE notes the commentor's concern.

**1921-7:** See response to comment 1921-1.

***Commentor No. 1922: Former Members of Congress;  
Honorable Sid Morrison/Honorable Mike McCormack***

September 5, 2000

Ms. Colette Brown  
DOE Office of Space and  
Defense Power Systems NE-50  
19901 Germantown Road  
Germantown, Maryland 20874-1290

Dear Ms. Brown:

We urge the DOE to restart the Fast Flux Test Facility (FFTF) to produce radio isotopes for much needed special pharmaceuticals.

As members of the Congressional Committee that oversaw and authorized funding for the construction and operation of the FFTF, we are especially aware of its unique and valuable ability to produce a variety of isotopes as they are needed.

We believe that abandoning the FFTF would constitute a mindless waste of a significant national resource. We must not let the fears associated with inaction on the handling of nuclear waste blind us to this opportunity to take advantage of an investment we have already made.

We wish to emphasize that producing medical isotopes at the FFTF would in no way impede the clean up of the military waste at Hanford. Nor would FFTF operations contribute to waste management challenges.

This exceptional reactor was built with emphasis on safety and flexibility. While the mission has changed, so have the medical needs of our nation. FFTF is uniquely capable of producing a promising array of isotopes for cancer research and therapy, both now and well into the new century.

Sincerely,



The Honorable Sid Morrison (R-Wash-4)  
Member of Congress 1981-1993



The Honorable Mike McCormack (D-Wash-4)  
Member of Congress 1971-1981

1922-1

***Response to Commentor No. 1922***

1922-1: DOE notes the commentor's support for Alternative 1, Restart FFTF.

**Commentor No. 1923: Robert G. Graves  
Benton PUD**



September 12, 2000

Ms. Colette E. Brown  
NE-50, Office of Nuclear Science  
Energy and Technology  
19901 Germantown Road  
Germantown, MD 20874

RE: *Support for the Fast Flux Test Facility*

Dear Ms. Colette:

The Fast Flux Test Facility (FFTF) located in Richland/Hanford, Washington, is a significant national asset as the most advanced and newest reactor that has established unmatched international records for performance, safety and efficiency. Because of its design and the large number of neutrons it can produce, FFTF provides the only full sized test facility for specialized leading edge research in international programs, fusion and medicine.

There are no military or weapons production programs planned for the FFTF. The programs proposed in the EIS include medical and industrial isotope production, production of isotopes for NASA space mission electrical power supplies, nuclear energy research, and development of programs for civilian applications.

The FFTF has the capability to produce a wide variety of isotopes for medical and industrial uses which are not available in adequate quantities anywhere. More than twenty urgently needed scarce radioisotopes of unusually high quality can be produced by FFTF for medical research, treatment, and diagnosis. The United States currently imports 90% of its medical isotopes, virtually all of which could be produced at the FFTF.

The FFTF had an outstanding performance record and was built to strict NRC safety standards. The reactor is inherently safe and has no significant environmental releases. Operation of the reactor will not result in the generation of any additional quantities of high-level waste and only very small amounts of low level, easily treated waste materials.

We support the restart and the continued utilization of the Fast Flux Test Facility. The FFTF is clearly the preferred alternative for the programs considered based on availability, capacity for multi product missions, demonstrated technology, cost effectiveness, safety and minimal environmental impact.

Sincerely,

Robert G. Graves  
President of the Commission

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**Response to Commentor No. 1923**

**1923-1**

**1923-1:** DOE notes the commentor's support for Alternative 1, Restart FFTF.

## Commentor No. 1924: Cyndy deBruler Columbia Riverkeeper



September 14, 2000

### BOARD OF DIRECTORS

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Colette Brown  
NE-50 USDOE  
19901 Germantown Rd  
Germantown, MD 20874

Dear Ms. Brown:

Please accept the following comments regarding the PEIS draft on FFTF restart on behalf of Columbia Riverkeeper, a public interest group located in the Columbia River Basin. As a member of the international Water Keeper Alliance we hold the support of tens of thousands of citizens across this nation. Please weigh these comments as representing those interests and more directly the interests of the approximately 2200 members and supporters in the Northwest.

- Your **compilations of prior public comment are seriously lacking** and show your failure to listen to the public. You fail to give any numerical breakdown for the 7000 comments received. You only say "**Many** of the commentators who attended the meetings in Seattle, Portland and Hood River were strongly opposed to the restart of FFTF." Then you go on to say "**Most** of the comments received at the Richland meeting were in support of restart." You need to state the numbers on these comments so Sec. Richardson is clear on where the people of the Northwest stand. You put the numbers in when it is to your advantage and leave them out when they are opposed. You need to note that every person at the Hood River hearings was opposed except the people who came to lecture us from the TriCities. You also failed to mention the 5 City Council Resolutions opposing FFTF restart which means you have representatives of entire cities opposing it and their numbers should be included. You must also note the opposition of an entire state as Governor Kitzhaber has taken a position opposing restart.

- You've **failed to demonstrate a compelling need** for the production of 1) plutonium for space, 2) medical or research isotopes or 3) nuclear energy research. Neither is there adequate justification for the **need to produce all of them at one site**. Neither is there justification for the **need to produce them domestically** (other than reference to some DOE policy) which makes no sense when we would continue to buy foreign nuclear fuel to run FFTF.

- You must include the recommendations of your own blue ribbon panel (**Subcommittee**

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## Response to Commentor No. 1924

**1924-1:** In preparing the Final NI PEIS, DOE has carefully considered and responded to all comments received from the public during the comment period, regardless of how or where they were received. All pertinent information and public input will be provided to the Secretary so that he may make an informed and unbiased decision with respect to the alternatives presented in this NI PEIS.

**1924-2:** Opportunities for public involvement in the NEPA process occur during the scoping process and the Draft PEIS public comment period in accordance with requirements and guidelines of CEQ and DOE regulations. As stated in Section N.1, one of six major purposes of the scoping process includes "... obtaining input from the public and other concerned entities on significant issues that should be evaluated" in the PEIS. Towards this end, all comments received were compiled and grouped in the NI PEIS comment tracking system to determine the major issues and public concerns to be addressed in the NI PEIS. Section 1.4 identifies the issues raised during the scoping process. Any numerical compilation of comments was done only for the purpose of determining the significant issues, whether expressed by individuals, organizations or public officials.

Comments received during the Draft NI PEIS public comment period were carefully reviewed and served as a basis for revisions to the Draft NI PEIS which appear in the Final NI PEIS and identified therein with a vertical bar in the right hand margin of the page. Volume 3 of the Final NI PEIS, referred to as the comment response document, contains a verbatim compilation of all comments received on the Draft NI PEIS along with DOE's response to each comment which will be used along with other factors by the Secretary of Energy as input to the Record of Decision.

As a result of the scoping and the Draft NI PEIS public hearing processes, the Final NI PEIS adequately and accurately addresses the public's concerns on the proposed actions.

DOE's responses to Oregon Governor Kitzhaber's letter are contained under Commentor No. 1648 in this volume.

**1924-3:** DOE notes the commentor's opposition to restarting FFTF for enhancing its existing nuclear facility infrastructure. Consistent with its mandates

## Commentor No. 1924: Cyndy deBruler Columbia Riverkeeper (Cont'd)

for Isotope Research and Production Planning) that advised **against** the use of FFTF for medical isotope production. Furthermore, EIS Isotope demand projections are outdated and inadequate. They also fail to take into account possible cancer cures like gene therapy that could make medical isotopes unnecessary. In addition, medical isotopes can be adequately produced at other DOE sites if they are a high priority as implied. Current isotope production levels for DOE reactors are misstated in the EIS at near capacity when most are only at around 50%.

- You must include the current demand estimates from NASA for Plutonium 238 which are considerably lower than your need projections and could easily be met under the current contract with Russia. A discussion of alternatives to plutonium fuel must be included. A renegotiated contract with Russia (at double the current cost) could meet future NASA needs at 1/3 the cost of FFTF restart.

- It is improper to release the draft EIS for public comment without the critical information requested by the public in the scoping meetings including:
  - cost analysis of restart and all alternatives with reasonable review time (FFTF will be much more expensive than reasonable alternatives by at least \$2 Billion.)
  - studies on treatment of wastes at all proposed sites and
  - nonproliferation impacts from FFTF and the importation of its necessary radioactive fuel from Europe. (Violation of the Nonproliferation Agreement by use of Highly Enriched Uranium fuel alone is reason enough to stop restart of FFTF!)

- You have failed to adequately characterize environmental impacts from FFTF restart. An example is the statement, "Environmental impacts associated with the existing inventory of spent fuel at Hanford site are minimal." To imply that the existing spent nuclear fuel inventory poses no problems is massively incorrect. More than 2100 tons of corroding spent fuel sites in aging water-filled basins near the Columbia River posing one of the largest problems for cleanup and an expected cost of more than \$1.6 billion. You must address all impacts on waste management and the environment at Hanford not dismiss them with erroneous statements.

- You must include the cost of FFTF and all companion facilities decontamination and decommissioning in the restart not just every other alternative. All facilities used in all other alternatives must show the cost of decontamination and decommissioning as well.

- You have failed to assess all existing contaminant sources at Hanford and all other sites before adding additional waste. You must assess current waste inventories and then assess the addition of any new waste to existing waste sources.

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(Cont'd)

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## Response to Commentor No. 1924

under the Atomic Energy Act, DOE is proposing this expansion for the purposes of addressing three primary needs:

1) to support the increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;

2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and which the U.S. has no long-term, assured supply; and

3) to support civilian nuclear research and development in order to maintain the clean, safe, and reliable use of nuclear power as a viable component of the United States' energy portfolio.

There is no requirement to conduct all of these missions at one site. In the Record of Decision process, DOE could choose any one of the alternatives or choose to combine components of several alternatives in selecting the most appropriate strategy. For example, DOE could select a low-energy accelerator to produce certain medical, research, and industrial isotopes, and an existing operating reactor to produce plutonium-238 and conduct nuclear research and development. Should FFTF be selected for restart in support of these missions, DOE expects it could utilize a 15-year supply of mixed-oxide fuel that would be available from Germany under favorable economic terms (i.e., no charge for the fuel).

**1924-4:** DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for

## Commentor No. 1924: Cyndy deBruler Columbia Riverkeeper (Cont'd)

- You fail to adequately consider use of the Advanced Test Reactor (ATR) in Idaho and the High Flux Isotope Reactor (HFIR) in Oakridge for medical isotopes while acquiring Plutonium 238 from another source. You also fail to analyze lower cost alternatives such as subsidizing university reactors or buying time from private accelerators or reactors.
- The No Action Alternative must include the shutdown of FFTF not maintaining it on stand-by based on prior commitments of Secretaries O'Leary and Watkins and TPA milestones.
- You failed to address the conflict of interest of using PNNL's evaluations when they are a proponent of restart and stands to gain financially.
- You fail to access the legality of introducing new programs and wastes into the highly contaminated 306 e or 325 buildings at Hanford that would be used with FFTF.
- You must admit that the real reasons to restart FFTF are in a hidden agenda that includes preserving jobs and starting new weapons research or other classified missions.
- The draft EIS must state the preferred alternative for adequate public review.
- You must include the impact on demand for medical and research isotopes of the new facility being built at Los Alamos. Why is this not even mentioned??

USDOE should choose Alternative 5- SHUT DOWN FFTF, or Alternative 2- Produce at existing sites with shutdown of FFTF.

Thank you for this opportunity to comment. We hope you will begin to listen to the people of the Northwest and request that these comments be forwarded to the Secretary of Energy who has unfortunately been kept in the dark about the massive opposition to the restart of this reactor in the Northwest.

Sincerely,

  
Cyndy deBruler  
Director

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1924-1

## Response to Commentor No. 1924

evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual growth of medical isotope use has tracked at levels consistent with the Expert Panel findings. Section 1.2.1 of Volume 1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

The conclusions presented in the NERAC Subcommittee for Isotope Research and Production Planning Final Report, April 2000 regarding the suitability of FFTF to produce research isotopes in a timely and cost efficient manner were made in the context of the facility producing research isotopes as its sole mission. It would not be cost effective to restart FFTF for the singular purpose of producing small quantities of various research isotopes. However, sustained operation of FFTF for the production of larger quantities of both research and commercial isotopes would be viable if operated in concert with producing plutonium-238 and conducting nuclear energy research and development for civilian applications. As the NERAC report states: "In limited instances, the DOE possesses unique resources, e.g., the high flux of fast neutrons and large irradiation volume in FFTF, that could be utilized for the production of some radioisotopes, but is best suited for commercial interests who might consider its use for isotope production." In recognition of these constraints on its operational feasibility, the NI PEIS only evaluates the use of FFTF when coupled with the other stated missions. While some existing reactors may possess the potential capability or capacity to support research isotope production, as suggested in the NERAC report, it is unlikely that reliable, increased production of these isotopes to support projected needs could be accomplished without impacting the existing missions of these facilities.

DOE has taken the Expert Panel and NERAC report recommendations under consideration in developing the range of alternatives evaluated in the NI PEIS. These reports were made available to the public at the NI PEIS public information centers and on the Internet at [www.nuclear.gov](http://www.nuclear.gov).

Currently, approximately 50 percent of DOE's isotope production capability is being used. Much of the remaining isotope production capability is dispersed throughout the DOE complex. This capability



***Commentor No. 1924: Cyndy deBruler  
Columbia Riverkeeper (Cont'd)***

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***Response to Commentor No. 1924***

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supports secondary missions, but cannot be effectively used due to the operating constraints associated with the facilities' primary missions (basic energy sciences or defense). DOE is currently meeting most of its short-term requirements. However, in the long-term (next 5 to 10 years) there will be a shortfall in available DOE capacity to meet demand. Should the isotope demand grow consistent with the Expert Panel Report, as it has recently, or if DOE's market share increases, there will be a need for expanded isotope production capacity in the short-term (less than 5 years).

**1924-5:** As discussed in Section 1.2.2, through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. The selection of power systems for space missions is the responsibility of NASA. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, DOE recognizes that any purchase beyond what is currently available to the United States through the existing contract would likely require negotiation of a new contract and may require additional NEPA review.

The May 22, 2000, correspondence from NASA to DOE identifies that NASA no longer has a planned requirement for small radioisotope thermoelectric generator (SRTG) power systems. This does not mean that NASA no longer requires DOE to provide the necessary plutonium-238 to support deep space missions. Rather, SRTG development efforts were stopped in order to permit reprogramming of funds to support development of a new radioisotope power system based on a Stirling technology generator. This new radioisotope power system, referred to in the subject correspondence, requires one-third less

***Commentor No. 1924: Cyndy deBruler  
Columbia Riverkeeper (Cont'd)***

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***Response to Commentor No. 1924***

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plutonium-238 as its fuel source. However, the Stirling technology is developmental and NASA has requested in a September 22, 2000, letter to DOE that large RTGs be maintained as backup. Section 1.2.2 of Volume 1 was revised to clarify plutonium-238 mission needs.

- 1924-6:** The environmental impacts of reasonable alternatives to fulfill the requirements of the missions were disclosed and evaluated in the NI PEIS. DOE made every effort to obtain, analyze, and disclose all required information to make a decision on expanding nuclear infrastructure. The costs and nuclear nonproliferation impacts of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report and Nuclear Nonproliferation Impact Assessment to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such ancillary documents need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed these documents to more than 730 interested parties on August 24 and September 8, 2000, respectively. Both reports were made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided summaries of the Cost Report and Nuclear Nonproliferation Impact Assessment in Appendixes P and Q, respectively, in the Final NI PEIS.
- 1924-7:** DOE notes the commentor's opinion. See response to Comment 1924-6.
- 1924-8:** This NI PEIS addressed the environmental impacts due to the treatment, storage and disposal of the waste generated by the proposed action for all alternatives and alternative options. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.
- 1924-9:** In the event that a decision is made to restart FFTF, the first six years of operation would use existing onsite mixed oxide fuel. DOE expects that an additional 15-year supply of mixed oxide fuel in Europe, owned by Germany, would be available for FFTF. The Nuclear Infrastructure Nonproliferation Impact Assessment for the NI PEIS alternatives,

***Commentor No. 1924: Cyndy deBruler  
Columbia Riverkeeper (Cont'd)***

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***Response to Commentor No. 1924***

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published in September, 2000, indicated that using the two different sources of existing mixed oxide (MOX) fuel for FFTF (existing FFTF fuel and German MOX fuel) would result in significant mitigating factors, indicating that substantial nonproliferation benefits could be gained by disposing of this inventory as spent fuel. During the period of MOX fuel use, in support of U.S. nonproliferation policy directives, DOE's Office of Nonproliferation and National Security would undertake a study under the Reduced Enrichment Research and Test Reactor (RERTR) program to consider the technical feasibility of using low enriched uranium to fuel the FFTF. Under this nonproliferation protocol, if use of low enriched uranium fuel is found infeasible in FFTF for meeting assigned missions, policy would allow DOE to subsequently procure highly enriched uranium fuel for use in FFTF. Again, this approach is consistent with U.S. nonproliferation policy.

**1924-10:** DOE notes the concern expressed in the comment on the potential health and environmental impacts of FFTF startup. All air emissions and wastewater discharges would be in accordance with applicable permit and regulatory requirements. The releases of air pollutants and contaminated liquid are addressed in Section 4.3 of Volume 1. The release of air pollutants would result in concentrations well below Federal and state air standards (Table 4-13). The release of radioactivity and hazardous chemicals into the atmosphere would have a negligible effect on human health (Tables 4-17 and 4-19, respectively). There would be no discernible impacts to groundwater or surface water quality (Section 4.3.1.1.4). All impacts on ecological resources, including animals and fish, associated with operation of FFTF would be small (Section 4.3.1.1.6).

It is concluded that operation of FFTF would have small adverse effects on the environment.

The discussion in the Summary and Section 4.8.3.5 of Volume 1 on the cumulative impacts for spent nuclear fuel management at Hanford was revised to clarify that the management of the existing spent nuclear fuel at Hanford results in a dose of less than 0.1 millirem per year of the maximally exposed member of the public. This dose is well within the DOE limits given in DOE Order 5400.5. As discussed in that Order, the dose limit from airborne emissions is 10 millirem per year, as required by the Clean Air Act; drinking water is 4 millirem per year, as required by the Safe Drinking Water Act; and the dose limit from all pathways

***Commentor No. 1924: Cyndy deBruler  
Columbia Riverkeeper (Cont'd)***

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***Response to Commentor No. 1924***

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combined is 100 millirem per year. DOE has committed to remove the spent nuclear fuel at Hanford for ultimate disposition in a geologic repository.

**1924-11:** Decommissioning FFTF, including associated costs and cleanup, is not within the scope of the NI PEIS. Before decommission activities were undertaken, DOE would prepare the appropriate environmental documentation to address the associated environmental impacts. Cost assessments would also be prepared.

**1924-12:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement.

Ongoing activities to remediate existing contamination at Hanford are high priority to DOE. The current inventory of wastes managed at the Hanford Site are identified in Section 3.4.11.1 of Volume 1. In addition, the generation rates of wastes associated with the NI PEIS options that use Hanford facilities are compared with the current waste generation rates at the site in Section 4.3 of Volume 1. As stated in Sections 4.3.1.1.13, 4.3.3.1.13, and 4.4.3.1.13, the generation rates of wastes at Hanford associated with the options that utilize either FFTF, FMEF and/or RPL 306-E would be much smaller than the current waste generation rates at the site. These volumes would also be small in comparison to the existing inventory at the site (Section 3.4.11.1). These comparisons were also made for the other options which involved INEEL and ORR facilities. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

**1924-13:** Under the No Action Alternative, ATR and HFIR would continue to produce medical isotopes and plutonium-238 could be purchased from Russia. ATR and HFIR would continue to produce medical isotopes under the remaining alternatives. The addition of a CLWR option under Alternative 2, Use Only Existing Operational Facilities, for plutonium-238

***Commentor No. 1924: Cyndy deBruler  
Columbia Riverkeeper (Cont'd)***

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***Response to Commentor No. 1924***

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production would permit the medical isotope mission at existing reactors to grow. However, this growth was not analyzed in the PEIS because it is not a new mission.

With regard to the commentor's second concern, DOE did consider the use of irradiation facilities other than those addressed under Alternatives 1 through 4. However, their use was dismissed for a variety of reasons as discussed in Section 2.6.1.

The No Action alternative is required under Council on Environmental Quality regulations (40 CFR 1502.14(d)). It provides a point of comparison for the action alternatives. The No Action Alternative generally represents the status quo; that is, it includes those actions that would normally take place without the proposed action. Since the status quo involves maintaining FFTF in standby and not its deactivation, it is not appropriate to include its deactivation as part of the No Action Alternative. Deactivation of FFTF is included as Alternative 5, Permanently Deactivate FFTF, and as part of Alternative 2, Use Only Existing Operational Facilities, Alternative 3, Construct New Accelerator(s), and Alternative 4, Construct New Research Reactor.

**1924-14:** The 300 Area Revitalization Plan (DOE 1999) provides for continued multi-program R&D operations in the 300 Area, including operation of various laboratories, office facilities, and services. It also provides for consolidation (but not complete elimination) of radiological operations, with support for Hanford Site facility transition and environmental restoration efforts. The plan does not require closure of the 325 and 306 E buildings as long as they are needed for active research projects. Operation of these facilities would not violate any existing agreements between DOE and stakeholders or other legal obligations, nor would it affect ongoing or planned environmental restoration and facility transition activities.

As discussed in Section 1.2 of Volume 1, plutonium-238 would be produced to support NASA's deep space missions. Plutonium-238 is not used to produce nuclear weapons. All missions considered in the NI PEIS are for civilian purposes.

PNNL is not preparing this PEIS, although it has offered technical comments on it. These comments have been evaluated by DOE and the contractor preparing the PEIS. PNNL has also previously provided

***Commentor No. 1924: Cyndy deBruler  
Columbia Riverkeeper (Cont'd)***

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***Response to Commentor No. 1924***

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technical and cost analyses on matters related to the FFTF, which have undergone independent scrutiny, and have helped confirm the need for the environmental review now being independently developed. PNNL's work does not present a conflict of interest. Ultimately, DOE has full control over the contents of the PEIS.

**1924-15:** At the time the Draft NI PEIS was completed and published, DOE did not have a preferred alternative. DOE used the environmental evaluation in the Draft NI PEIS, and also other reports on cost and nonproliferation impacts, as well as input from the public to develop its preferred alternative. Council on Environmental Quality regulations (40 CFR 1502.14(e)) do not require the inclusion of a preferred alternative in a draft EIS if one has not been identified at that time. However, the regulations do require identification of a preferred alternative in the final document. DOE has identified a preferred alternative in Section 2.8 of the Final NI PEIS.

**1924-16:** The Isotope Production Facility (IPF) at Los Alamos National Laboratory produces radioisotopes using the Los Alamos Neutron Science Center's LANSCE) half-mile accelerator that delivers medium-energy protons. Among other isotopes, the IPF's three major products include germanium-68, strontium-82, and sodium-22. As a result of changing DOE missions, the production of radioisotopes at target area "A" of the LANSCE has been rendered inoperable. In order to replace the level of production lost due to this change, DOE is completing a new and more efficient IPF that would allow DOE to continue to produce most of these same isotopes in an effort to meet existing demand. As addressed in Section 2.6.1 of the NI PEIS, IPF at LANSCE was considered but dismissed from further evaluation because, although it can be used in tandem with the Brookhaven Linac Isotope Producer (BLIP) located at the Brookhaven National Laboratory to supply near-term isotope requirements, it is unlikely that these facilities could accomplish reliable, increased isotope production at the level needed to support projected needs.

In 1998, an Expert Panel convened to forecast future demand for medical isotopes estimated that the expected growth rate of medical isotope use during the next 20 years will range between 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These growth projections were adopted by DOE as a planning tool for evaluating the potential capability of the existing

***Commentor No. 1924: Cyndy deBruler  
Columbia Riverkeeper (Cont'd)***

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***Response to Commentor No. 1924***

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nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual growth of medical isotope use has tracked at levels consistent with the Expert Panel findings. As addressed in Section 2.6.1 of the NI PEIS, IPF at LANSCE was considered but dismissed from further evaluation because, although it can be used in tandem with the Brookhaven Linac Isotope Producer (BLIP) located at the Brookhaven National Laboratory to supply near-term isotope requirements, it is unlikely that these facilities could accomplish reliable, increased isotope production at the level needed to support projected needs.

**1924-17:** DOE notes the commentor's support for Alternative 5, Permanently Deactivate FFTF, or Alternative 2, Use Only Existing Operational Facilities.

## Commentor No. 1925: Stanley Hobson, INEEL Citizens Advisory Board



### Citizens Advisory Board

Idaho National Engineering and Environmental Laboratory

00-CAB-065

August 31, 2000

William B. Richardson  
Secretary of Energy  
U.S. Department of Energy, Headquarters  
1000 Independence Avenue, S.W., MS 7E-079  
Washington, DC 20585

Dear Secretary Richardson:

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Stanley Hobson

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Jan M. Edelstein

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I am a member of DOE's Environmental Management Site Specific Advisory Board for the Idaho National Engineering and Environmental Laboratory (INEEL). Within our charter under the Department of Energy, we develop all of our recommendations through consensus-building processes involving the full membership of the Citizens Advisory Board (CAB) in a public setting. The INEEL CAB meets every other month for two full days. This schedule sometimes makes it difficult for us to provide our consensus recommendations within the established public comment periods. When we believe a particular issue for which DOE is seeking citizen input is of considerable importance to the INEEL, we request an extension for the public comment period. We find ourselves in that position once again, with regard to the Draft Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility (NI PEIS).

The comment period for the NI PEIS is scheduled to end on September 18, 2000; our next CAB meeting is scheduled for September 19 and 20, 2000. We have requested for an extension of the comment period so that we can develop an informed, consensus recommendation on this proposed action(s) with significant potential impact on the INEEL. We have not yet received a written response to that request. I have been very cordially advised by telephone (via calls from Mr. Dan Funk and Ms. Collette Brown) that DOE has received our request for an extension. Both further explained that an extension of the comment period would not be granted due to internally determined schedule constraints for this PEIS. Both Mr. Funk and Ms. Brown encouraged the submission of our consensus recommendation, although the comment period will be closed before we will be able to complete our processes.

The INEEL CAB uses topical committees (from within its membership) to review documents and prepare draft recommendations for consideration by the full board at its next meeting. (We define consensus as "all members understand and support the content and intent" of the recommendation.) The NI PEIS is currently being reviewed by one of our issue committees. Discussions within the committee indicate several major areas of concern. These concerns can only be forwarded to the Department after reaching consensus within the entire INEEL CAB. The value of further review by the relevant committee and of full Board deliberations striving toward consensus is, at best, a problem in light of the September 18, 2000 deadline.

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<http://www.ida.net/users/cab>

## Response to Commentor No. 1925

1925-1

**1925-1:** DOE values the input of the INEEL CAB to the NEPA process and that of all of its advisory boards. The effort inherent with the development of the CAB's consensus recommendations and its value to informed decision making is also appreciated. DOE stated in the Notice of Availability (65 FR 46443 et seq.) that it would consider comments submitted after the close of the comment period on September 18, 2000 to the extent practicable. Responses to the INEEL CAB comments are shown under Comment Number 2050 of this comment response document (Volume 3 of the NI PEIS).



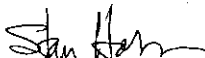
## Commentor No. 1925: Stanley Hobson (Cont'd) Citizens Advisory Board

We find ourselves in a dilemma, Mr. Secretary. On the one hand, we believe that DOE's efforts to address our concerns would considerably strengthen the EIS. On the other hand, as volunteers, we want the expenditure of our time to be productive. The alternatives and options being considered in this EIS portend significant federal outlays. This environmental documentation and the decision-making process it supports are important to DOE, important to the citizenry of the country, and perhaps just a little more important to the potentially impacted sites and their surrounding communities. We would hope that developing a thorough and legally-defensible EIS—one that has been provided to the public consistent with provisions for public participation under the National Environmental Policy Act—is more important than meeting a self-imposed deadline.

In my several years of service on the INEEL CAB, I have come to genuinely believe our jointly-derived, consensus recommendations are vastly superior to any I could develop on my own. I offer my thoughts on the EIS and my concerns about the associated public participation efforts as a private citizen who has invested a number of hours of my own time in reviewing the EIS. I have made this investment of my time in preparation for listening to my esteemed colleagues and then participating in collaborative work to forge a consensus recommendation that is worthy of transmittal to the Department. The Board has not met, nor deliberated on the contents of this letter; the thoughts I am expressing have not been approved by my peers.

I very much appreciate the recent efforts by Ms. Brown and Mr. Funk to keep me, as Chair of the INEEL CAB, informed.

Sincerely,



Stanley Hobson

cc: INEEL CAB Membership

1925-1  
(Cont'd)

## Response to Commentor No. 1925

**Commentor No. 1926: Earl C. Leming, State of Tennessee,  
Department of Environment and Conservation**



STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
DOE OVERSIGHT DIVISION  
751 EMORY VALLEY ROAD  
OAK RIDGE, TENNESSEE 37830-7072

September 14, 2000

Colette Brown,  
US Department of Energy  
Office of Space and Defense Power Systems (NE-50)  
19901 Germantown Road  
Germantown MD 20874-1290

Dear Ms Brown

**Document NEPA Review: Draft Programmatic Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility (Nuclear Infrastructure Programmatic Environmental Impact Statement [NI PEIS]) (DOE/EIS-0310D)**

The Tennessee Department of Environment and Conservation, DOE oversight Division (TDEC/DOE-O) has reviewed the subject document in accordance with the requirements of the National Environmental Policy Act (NEPA) and associated regulations of 40 CFR 1500-1508 and 10 CFR 1021 as implemented.

**General Comments**

The listed options that incorporate use of existing facilities demonstrate that no increased impacts would be associated with operations on the Oak Ridge Reservation (ORR). Since the options that incorporate the building of new facilities do not specifically state where the new facilities would be located on the ORR, there is no means to properly evaluate impacts associated with this new construction. If one of these options is chosen, then further evaluation will become necessary.

**Specific Comments**

**1. Volume 1, Page 1-5, Table 1-1 and Related Text**

DOE will soon be supplying medical isotopes derived from uranium-233 (U-233) for the *Phase II Leukemia Research Trials* to be conducted during the fall of 2000. The isotopes of interest for these studies (and for the ultimate treatment of leukemia) are actinium-225 (Ac-225) and bismuth-213 (Bi-213). Ac-225 and Bi-213 are not listed in Table 1-1 of the NI PEIS. Please list Ac-225 and Bi-213 in Table 1-1 and also address those isotopes, as well as U-233, in the text of the NI PEIS.

1926-1

1926-2

**Response to Commentor No. 1926**

- 1926-1:** DOE notes the commentor's observations. DOE used the generic site approach for Alternatives 3 and 4 in the absence of specific siting alternatives. This level of analysis is appropriate for a PEIS. Projected construction and operational data on nonradiological air emissions, water use, radiological and chemical releases, and waste generation are provided at a level of detail commensurate with that provided for the existing facilities under consideration. Should one of these alternatives ultimately be selected on the basis of its technical merit for accomplishing the stated missions and the assessment of environmental impacts, subsequent NEPA reviews would be conducted to include an analysis of siting alternatives and associated site-specific impacts.
- 1926-2:** The commentor identifies several isotopes that are not discussed in the Draft NI PEIS. DOE is supplying small amounts of isotopes actinium-225 and bismuth-213 for medical clinical trials. The small quantity needed for these clinical trials was produced by chemically processing uranium-233. If clinical trials are successful, large quantities might require the use of a reactor or accelerator to meet this possible future demand. In response to comments on the Draft NI PEIS, a discussion of isotopes that can be extracted from existing supplies of long-lived isotopes, including progeny of uranium-233, has been added to Section 2.7.3 of Volume 1.

**Commentor No. 1926: Earl C. Leming, State of Tennessee,  
Department of Environment and Conservation (Cont'd)**

**2. Volume I, Page 1-13, Section 1.6, Related NEPA Reviews**

DOE has stated in correspondence with the Division that it plans to initiate a specific "U-233 Storage and Disposition Programmatic Environmental Impact Statement (PEIS)" in 2002. This PEIS should be listed and discussed in Section 1.6 of the NI PEIS.

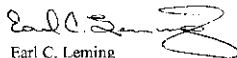
**3. New Accelerator(s) Alternative (Alternative 3, Page 2-61, Section 2.2.4) and  
New Reactor Alternative (Alternative 4, Page 2-63, Section 2.5.5)**

These sections in the NI PEIS mention that if either the new accelerator(s) or new reactor alternatives are chosen, the facility "...would be constructed at an existing DOE site." The possible locations of the new accelerator(s) and reactor should be listed and discussed in the NI PEIS. Without this information, an adequate evaluation of the alternatives cannot be conducted.

The above sections in the NI PEIS state that "Targets for medical and industrial isotope production would be fabricated in a new support facility located at the same site as the new low energy accelerator (or reactor)" if alternative 3 or 4 is chosen. It is the Division's position that an existing facility should be utilized as a support facility if practical.

If you have any questions concerning these comments, please contact me at (865) 481-0995.

Sincerely



Earl C. Leming  
Director

cc: Dodd Galbreath - TDEC  
Eddie Nanny - TDEC  
Rodney Nelson - DOE

Ecl540.99

**1926-3**

**1926-3:** DOE is no longer planning to initiate a U-233 storage and disposition PEIS in 2002. Rather, DOE is changing its plans for the use of uranium-233 at Oak Ridge. An appropriate NEPA review would be performed for the proposed action to determine the level of NEPA documentation.

**1926-1**

**1926-4:** As noted in Sections 2.5.4. and 2.5.5 of Volume 1, because Alternative 3, Construct New Accelerator(s), and Alternative 4, Construct New Research Reactor, are evaluated at a generic DOE site(s), no credit was taken for any support infrastructure existing at the site and it was postulated that a new support facility would be required. However, it is highly unlikely that DOE would consider locating either a new accelerator(s) or reactor on a DOE site(s) that does not have existing infrastructure capable of supporting all or most of the infrastructure requirements.

**1926-4**

**Commentor No. 1927: Rebecca J. Inman**  
**State of Washington, Department of Ecology**



STATE OF WASHINGTON  
 DEPARTMENT OF ECOLOGY  
 P.O. Box 47600 • Olympia, Washington 98504-7600  
 (360) 407-6000 • TDD Only (Hearing impaired) (360) 407-6006

September 13, 2000

Colette E Brown, Document Manager  
 Office and Defense Power Systems (NE-50)  
 Office of Nuclear Energy, Science & Technology  
 US Dept of Energy  
 19901 Germantown Rd  
 Germantown MD 20874

Dear Ms. Brown:

Thank you for the opportunity to comment on the draft programmatic environmental impact statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility (NI PEIS) [DOE/EIS-0310D]. We have reviewed the draft EIS and have the following comments.

General Comments:

- (1) The description in Section 3.4 of the Hanford environment impacted by the use of the Fast Flux Test Facility (FFTF) is relatively thorough, especially compared to other Department of Energy programmatic environmental impact statements (PEIS), such as the Waste Management PEIS.
- (2) The cost information in the document is incomplete. It appears the real tradeoff is between use of the FFTF and cutting or prioritizing certain research activities at currently operating facilities. The PEIS fails to make a specific case why creating new capacity is necessary. Please expand the document to include this information.
- (3) The "Purpose and Need" section (1.2) is very qualitative, based on summary assertions from advisory committees. To some degree, the sources cited that are available via the Internet do not provide a quantitative basis to assess the need for additional capacity. Consequently, "Comparison of Mission Effectiveness Among Alternatives" (Section 2.7.1.2.3) is very brief and inconclusive. As there is no cost analysis included in the draft NI PEIS, it is impossible to evaluate the tradeoffs between the options in terms of meeting specific needs based on relative costs. Please expand the NI PEIS to include this discussion.
- (4) The list of "Related NEPA Reviews" in Section 1.6 is illuminating and helpful. However, the text does not help the reader clearly understand how these reviews relate to the decisions to be made under this PEIS. Perhaps a graphic or table showing links would be helpful.

1927-1

1927-2

1927-3

1927-4

1927-2

1927-5

**Response to Commentor No. 1927**

**1927-1:** DOE notes the commentor's view that Volume 1, Section 3.4 of the NI PEIS presents a relatively thorough description of the affected environment at Hanford.

**1927-2:** CEQ (40 CFR 1500 et seq.) and DOE (10 CFR Part 1021) implementation regulations do not require inclusion of cost studies in an environmental impact statement. The basic purpose of the NI PEIS is to describe the alternatives under consideration for implementation (Section 2.5 of Volume 1) and the environmental impacts that would occur if these alternatives were implemented (Chapter 4 of Volume 1). Pursuant to CEQ regulations (40 CFR 1505.1(e)), agencies are encouraged to make ancillary decision documents available to the public before a decision is made. The associated cost report was made available to the public on August 24, 2000. DOE mailed this document to approximately 730 interested parties, and the report was made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in public reading rooms.

**1927-3:** DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual growth of medical isotope use has tracked at levels consistent with the Expert Panel findings. Section 1.2.1 of Volume 1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

The conclusions presented in the NERAC Subcommittee for Isotope Research and Production Planning Final Report, April 2000 regarding the suitability of FFTF to produce research isotopes in a timely and cost efficient manner were made in the context of the facility producing

## Commentor No. 1927: Rebecca J. Inman, State of Washington, Department of Ecology (Cont'd)

Colette E Brown  
September 13, 2000  
Page 2

- (5) The PEIS does not address decommissioning, closure, and long-term stewardship requirements for facilities. In particular, what would be the long-term added requirements and costs were FMEF to be used and contaminated? Please include a discussion on these issues.
- (6) The information (calculations, etc.) to establish the basis for the amount of waste generated by restart of FFTF is not included. Please clarify this issue in the final document.

### Specific Comments

Page S-8 The second sentence of the next to last paragraph states "However, in Richland, Washington, the meeting was attended by several stakeholder and environmental groups who voiced considerable opposition...", while on page S-9 the fourth sentence of the fourth paragraph says "Most of the comments received at the Richland, Washington, meeting supported restarting FFTF." Please clarify this discrepancy in the final document.

Page S-29 The third sentence of the next to the last paragraph says "200 degrees C (44 degrees F)". Centigrade temperatures are converted to Fahrenheit by multiplying by 9/5 and adding 32; (200x9/5) plus 32 = 392 degrees F. Please correct the error in the final NI PEIS.

Page S-63 The third sentence under Spent Fuel Management states "The environmental impacts associated with the existing inventory of spent fuel at Hanford site are minimal. Please expand this section to include the justification for the statement.

Section 4.3.1.1.13 The statement made here and elsewhere in the document that "transuranic waste would be... eventually shipped to a suitable geologic repository for disposal" lacks candor. There is no disposal path for transuranic wastes generated in this program. Indefinite storage on-site appears highly likely. Please clarify the disposal pathway for this material.

The same section states that low-level and mixed low-level wastes were analyzed in and will be handled under the Waste Management PEIS Records of Decision. It would be helpful to see exactly where these wastes were covered in the Waste Management PEIS. Furthermore, if they are not disposed of commercially (the "preference" expressed in this draft PEIS), they would likely be disposed of on-site. To assert that would have no impact at Hanford is premature, based on the Waste Management PEIS. The Hanford Radioactive and Hazardous Solid Waste draft EIS has yet to be released for public review. Please include this discussion in the final NI PEIS.

1927-6

1927-7

1927-8

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1927-11

## Response to Commentor No. 1927

research isotopes as its sole mission. It would not be cost effective to restart FFTF for the singular purpose of producing small quantities of various research isotopes. However, sustained operation of FFTF for the production of larger quantities of both research and commercial isotopes would be viable if operated in concert with producing plutonium-238 and conducting nuclear energy research and development for civilian applications. As the NERAC report states: "In limited instances, the DOE possesses unique resources, e.g., the high flux of fast neutrons and large irradiation volume in FFTF, that could be utilized for the production of some radioisotopes, but is best suited for commercial interests who might consider its use for isotope production." In recognition of these constraints on its operational feasibility, the NI PEIS only evaluates the use of FFTF when coupled with the other missions. While some existing reactors may possess the potential capability or capacity to support research isotope production, as suggested in the NERAC report, it is unlikely that reliable, increased production of these isotopes to support projected needs could be accomplished without impacting the existing missions of these facilities.

DOE has taken the Expert Panel and NERAC report recommendations under consideration in developing the range of alternatives evaluated in the NI PEIS. These reports were made available to the public at the NI PEIS public information centers and on the Internet at [www.nuclear.gov](http://www.nuclear.gov).

Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, DOE recognizes that any purchase beyond what is currently available to the United States through the existing contract would likely require negotiation of a new contract and may require additional NEPA review.

## Commentor No. 1927: Rebecca J. Inman, State of Washington, Department of Ecology (Cont'd)

Colette E Brown  
September 13, 2000  
Page 3

Chapter 5: The list of potentially applicable laws and regulations (Chapter 5) is quite exhaustive. However, the text does not indicate specifically which state laws and regulations (Section 5.1.4) the Department of Energy actually commits to comply with. Please expand this section to clarify the regulations that will be complied with.

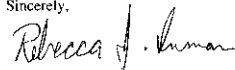
Section 5.1.4: Delete the word 'potentially' from the third line in the paragraph above Table 5-2. The sentence should read "A list of applicable state laws, regulations and agreements is provided in Table 5-2."

Section 5.1.4, Table 5-2: Replace the word "Potential" from the third column of Table 5-2 with the word "Regulatory." The heading should read 'Regulatory Requirements.'

The tenth item identified in this table is the "Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)." The description in the third column under "Potential Requirements" is not complete. The Tri-Party Agreement does not establish the applicability of state and federal laws but determines the steps necessary to bring Hanford into compliance with state and federal regulations. Replace the information in this column with the following wording: 'The Tri-Party Agreement is an enforceable agreement which details work necessary to comply with State and Federal hazardous waste management requirements.'

Thank you again for the opportunity to comment on the NI PEIS. If you have any questions, please call Mr. Max Power with our Nuclear Waste Program at (360) 407-7118.

Sincerely,



Rebecca J Inman  
Environmental Coordination Section

EIS #005089

cc: Steve Moore, Kennewick  
Max Power, Nuc Waste

1927-12

1927-13

1927-14

## Response to Commentor No. 1927 (Cont'd)

The May 22, 2000, correspondence from NASA to DOE identifies that NASA no longer has a planned requirement for small radioisotope thermoelectric generator (SRTG) power systems. This does not mean that NASA no longer requires DOE to provide the necessary plutonium-238 to support deep space missions. Rather, SRTG development efforts were stopped in order to permit reprogramming of funds to support development of a new radioisotope power system based on a Stirling technology generator. This new radioisotope power system, referred to in the subject correspondence, requires one-third less plutonium-238 as its fuel source. However, the Stirling technology is developmental and NASA has requested in a September 22, 2000, letter to DOE that large RTGs be maintained as backup. Section 1.2.2 of Volume 1 was revised to clarify plutonium-238 mission needs.

The major mission of FFTF would not be the production of plutonium-238. Rather, all three missions are of equal importance; no one mission is given priority in the NI PEIS.

**1927-4:** Volume 1, Section 2.7.1.2.3 of the Draft NI PEIS presents a comparison of mission effectiveness among alternatives. This section has been revised in the Final NI PEIS (see Section 2.7.1.8, "Comparison of Mission Effectiveness Among Alternatives") to provide the reader a better understanding of the medical isotopes that can be produced using accelerator technology (Alternative 3) and reactor technology alternatives (Alternatives 1 and 4).

**1927-5:** DOE notes the commentor's view. Discussions addressing related NEPA reviews, originally presented in Section 1.6 of the Draft NI PEIS, are now presented in Section 1.7 of the Final NI PEIS. The relevance of each of these NEPA reviews to the NI PEIS analyses is provided at the end of each individual discussion.

**1927-6:** Decommissioning of existing facilities, including FMEF, and their closure and long-term stewardship requirements are not within the scope of the NI PEIS. Before these activities were undertaken, DOE would prepare the appropriate environmental documentation to address the associated environmental impacts. Cost assessments would also be prepared.

**1927-7:** The NI PEIS provides references for the sources of waste generation in each of the alternatives and alternative options. The waste generation estimates for FFTF were obtained from the May 2000 draft of the

***Commentor No. 1927: Rebecca J. Inman, State of Washington, Department of Ecology (Cont'd)***

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***Response to Commentor No. 1927 (Cont'd)***

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“Waste Minimization and Management Plan for FFTF.” The estimates used in the draft plan were based on information from past operations of the FFTF. Waste generation and disposition are detailed in Chapter 4 of the NI PEIS for each of the alternatives.

- 1927-8:** Page S-8 of the Draft NI PEIS summarizes comments DOE received at the Plutonium-238 Production EIS scoping meetings that were held in November 1998. The comments summarized on page S-9 of the Draft NI PEIS are comments DOE received at the NI PEIS scoping meetings held in October 1999. Appendix N of the NI PEIS summarizes the comments received during both public scoping periods.
- 1927-9:** The commentor is correct. The value of 392 degrees F is the correct conversion of 200 degrees Centigrade to Fahrenheit temperature. However, since 200 degrees Centigrade is identified as approximate, the value of 400 degrees F has been inserted in the parentheses on page S-29 of the final PEIS instead of the incorrect value of 44 degrees F. This error has no effect on the results presented in the EIS.
- 1927-10:** The discussion in the Summary and Section 4.8.3.5 of the NI PEIS on the cumulative impacts for spent nuclear fuel management at the Hanford Site was revised to clarify that the management of the existing spent nuclear fuel at Hanford results in a dose of less than 0.1 millirem per year to the maximally exposed member of the public. This dose is well within the DOE limits given in DOE Order 5400.5. As discussed in that Order, the dose limit from airborne emissions is 10 millirem per year, as required by the Clean Air Act; drinking water is 4 millirem per year, as required by the Safe Drinking Water Act; and the dose limit from all pathways combined is 100 millirem per year. DOE has committed to remove the spent nuclear fuel at Hanford for ultimate disposition in a geologic repository.
- 1927-11:** Sections 4.3.1.1.13, 4.3.2.1.13, 4.3.3.1.13, and 4.4.3.1.13 were revised to address comments received during the public comment period. These sections now state that “DOE is considering whether the waste from processing of irradiated neptunium-237 targets should be classified as high-level radioactive waste and not transuranic waste. Irrespective of how the waste is classified (i.e., transuranic or high-level radioactive waste), the composition and characteristics are the same and the waste management activities (i.e., treatment and onsite storage) as described in this NI PEIS would be the same. In addition, either waste type would

***Commentor No. 1927: Rebecca J. Inman, State of Washington, Department of Ecology (Cont'd)***

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***Response to Commentor No. 1927 (Cont'd)***

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require disposal in a suitable repository. If it is transuranic waste, it would be nondefense waste and could not be disposed of at WIPP under current law. Because nondefense transuranic waste has no current disposal path, DOE Headquarters' approval would be necessary before a decision is made to generate such waste, as required by DOE Order 435.1. If the waste is classified as high-level radioactive waste, it is assumed for the purposes of this analysis that Yucca Mountain, Nevada, if approved, would be the final disposal site for DOE's high-level radioactive waste."

Section 4.3.1.1.13 states that "In accordance with the Records of Decision for the 'Waste Management PEIS', wastes could be treated and disposed of on site at Hanford or at other DOE sites or commercial facilities." The paragraph continues on to provide summaries of the various Records of Decision for each of the waste types. This section does not state that the wastes that would be generated from the proposed alternative or alternative options were included in the Waste Management PEIS.

Section 4.8 of the NI PEIS provides information on the cumulative impacts. The waste management information has been revised from the draft to include capacities for the treatment, storage and disposal facilities. For this assessment the total maximum waste volume that would be generated for each site were added to the total site baseline for the 35 year nuclear infrastructure operation and can be compared to the site's storage, treatment and disposal capacities.

**1927-12:** Section 5.1.1 provides information on the Federal environmental, safety, and health laws and regulations including the applicability to the alternatives. In the Final NI PEIS, Section 5.1.4 provides information on environmental requirements, which were previously addressed in Section 5.1.1, that have been delegated to state authorities or for which the state has established their own programs. DOE is committed to comply with state laws and regulations, as they are determined applicable to the proposed action.

**1927-13:** Section 5.1.4 has been revised in the Final NI PEIS to reflect the commentor's request.

**1927-14:** Table 5-2 in the Final NI PEIS has been revised to reflect the commentor's request.



***Commentor No. 2014: Sally Yocum***

From: SALLY YOCUM  
 [SMTP:SLY.IN.WYO@HQRTMTA1.DOE.GOV]  
 Sent: Wednesday, September 20, 2000 10:32:12 AM  
 To: INFRASTRUCTURE\_PEIS, NUCLEAR  
 Subject: plutonium production  
 Auto forwarded by a Rule  
 September 18, 2000

Ms. Colette Brown  
 DOE, Office of Space and Defense Power Systems

Dear Ms. Brown,

Your Department's recent proposal to expand the civilian nuclear infrastructure, as outlined in the Draft Programmatic Environmental Impact Statement, for accomplishing expanded civilian nuclear energy research and development and the isotope production mission in the United States, including the role of the Fast Flux Test Facility, raises significant nuclear weapons proliferation issues, as well as environmental issues and human health concerns.

As a concerned taxpaying and voting citizen living downwind of the INEEL, I have become aware of the serious nuclear waste and contamination problems at this facility, as well as the irresponsible attempts to cover up or downplay these problems. INEEL is one of the most contaminated areas in America. The Department's recent estimate on cleaning up this site is \$22 billion and is expected to take 50 years—longer than any other DOE facility. In addition, we have over 360 individual superfund sites within the 890 sq. mile area that comprises INEEL. With this known, the last thing we need is a plan to generate more nuclear waste at a site that can't handle the waste it already has. INEEL needs more waste like the DOE needs more security security scandals. Out of concern for Idaho's environment, I strongly urge you not to pursue the plutonium\_238 production mission as outlined in your PEIS.

2014-1

***Response to Commentor No. 2014***

- 2014-1:** The commentor's position regarding waste generation and selection of INEEL's Fluorinel Dissolution Processing Facility for plutonium-238 production is noted. Waste management at INEEL is discussed in Volume 1, Section 3.3.11. Waste generation and disposition that would result from selection of the Fluorinel Dissolution Processing Facility to support plutonium-238 production is described in Section 4.3.2.1.13. Use of facilities considered in the NI PEIS would not impact the cleanup missions at their respective sites.
- 2014-2:** The use of proposed alternative facilities associated with processing of neptunium-237 targets would have no impact on schedules or available funding for high-level radioactive waste programs at either Hanford or INEEL. At INEEL, the tanks would not be used although certain facilities at the Idaho Nuclear Technology Engineering Center (INTEC) would be used to treat the wastes resulting from processing the irradiated targets. These are reliable systems that would process a maximum of 1,050 cubic meters of low-level radioactive waste over the 35-year nuclear infrastructure operational period. The higher activity waste would be treated as a solid form via a stand-alone vitrification system, separate from any tank waste treatment system. At Hanford, the existing high-level radioactive waste facilities would not be used, and as analyzed in the PEIS, no existing or planned high-level radioactive waste facilities would be used to treat the wastes resulting from processing the irradiated targets.
- 2014-3:** Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions; no viable alternative to using plutonium-238 to support these missions currently exists. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Without an assured domestic supply of plutonium-238, DOE's ability to support future NASA space exploration missions may be lost.

### *Commentor No. 2014: Sally Yocum (Cont'd)*

One of the most daunting problems confronting cleanup at major DOE facilities such as Hanford and INEEL, is the solidification of liquid high\_level nuclear waste. Your current plan for plutonium\_238 production entails the generation of approximately 288,000 additional gallons of this waste over the project's 35 year span. While this is a small portion of Hanford's high level waste, it is approximately one fifth of what is remaining in Idaho, which makes it a very significant amount. Previous leakage of this waste at INEEL and Hanford threatens our already contaminated water supplies. What we certainly don't need is any more of this most highly problematic of waste forms.

Given the certain risks inherent in production of plutonium, the justified need for this material would have to be tremendous, and the PEIS does a poor job of providing ample justification. Beyond the risks involved in production, and the aforementioned resulting waste problem, there is also the issue of an accident occurring upon lift\_off or reentry of a space probe carrying this material. The Cassini probe, launched in 1997, carried 72 pounds of Pu\_238. The potential for an explosion during lift\_off or upon an inadvertent re\_entry during the fly\_by phase, gave many in the scientific community pause, including top scientists within NASA. According to NASA's own conservative estimate, a burn up upon reentry of the Cassini probe could have caused 2,300 cancer fatalities; independent analyses ranged much higher. This potential for a catastrophic release of this extremely toxic material will be imminent, as long as the US government remains committed to the use of plutonium\_238. If DOE is to have a role in developing power systems for NASA's instrumentation, it should focus on promising solar technology, an alternative that has been promoted in the European scientific community, or at best research other alternative power methods.

There are also proliferation concerns as it pertains to this plan. A return to production of this isotope, however poorly justified, means a return to the use of aqueous reprocessing at DOE facilities where

2014-2

2014-3

2014-4

2014-5

### *Response to Commentor No. 2014*

DOE could purchase plutonium-238 from Russia; however, for supply reliability reasons and concerns for nuclear nonproliferation, DOE's preference is to establish a domestic plutonium-238 production capability. Section 1.2.2 of Volume 1 was revised to further clarify the purpose and need for reestablishing a domestic plutonium-238 production capability to support NASA space exploration missions.

Potential health and safety impacts associated with normal operations, facility accidents, and transportation as a result of the proposed production of plutonium-238 are relatively low and are discussed in detail in Chapter 4 of Volume 1, and Appendixes H, I, and J of Volume 2 in the Final NI PEIS.

**2014-4:** DOE notes the commentor's concern for NASA's use of nuclear materials for space missions and interest in the development of alternative energy sources for space missions, although issues such as NASA research priorities are beyond the scope of this NI PEIS. Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. These radioisotope power systems have been used for almost 40 years, and have repeatedly demonstrated their performance, safety, and reliability in various NASA space missions. NASA establishes the need and requirements for space missions and undergoes a thorough NEPA evaluation for each launch.

**2014-5:** It is not true that resumption of plutonium-238 production constitutes a return to reprocessing. The aqueous technique that would be used to separate plutonium consisting of over 80 percent plutonium-238 and neptunium from the irradiated target is similar to the technology that was used in portions of the complex process to extract plutonium-239. However, as discussed in PEIS Sections S.3, 2.2.3 and A.1.4, this technology would be used to chemically separate plutonium-238 and neptunium from irradiated targets and not from irradiated or spent nuclear fuel, whereas reprocessing separates weapons grade plutonium-239 from irradiated nuclear fuel. Plutonium-238 extraction is not reprocessing. Unlike plutonium-239, plutonium-238 is not used in nuclear weapons, but rather it would be used as a power and heat source for NASA space missions.

**Commentor No. 2014: Sally Yocum (Cont'd)**

this dirty and ancient technology has been used to extract bomb material for the weapons program. From President Carter to presidents Bush and Clinton, US policy has been to halt reprocessing in this country in order to set a global precedent to curtail the spread of nuclear weapons material\_a noble effort in serious need of bolstering through aggressive action.

Indeed, an otherwise lukewarm Nuclear Infrastructure Nonproliferation Impact Assessment conducted by your Office of Arms Control and Nonproliferation questions whether our commitment to nonproliferation isn't weakened by the use of the Fluorinel Dissolution Process Facility within Building 666 at INEEL. INEEL's reprocessing facility is next door to a wet storage unit for Navy spent fuel, which contains a greater than average amount of highly enriched uranium. It was reprocessed from 1953 to 1989 at INEEL for the weapons program. Use of this facility to carry out plutonium\_238 extraction, especially considering the dubious need for this isotope, at the very least raises the concern that DOE is not fully committed to ending reprocessing. How can the international community be expected to trust DOE's civilian\_mission claim when this agency is obviously devoutly committed to development of weapons by using nuclear weapons technology at a weapons facility?

The silent issue of transportation of these high\_level radioactive materials has not been mentioned. As we well know, the inherent risks of transportation are of a huge concern, and not to include this in the PEIS is irresponsible and makes for an incomplete study.

Considering all these factors that could adversely affect our environment and commitment to nonproliferation, I strongly urge you to select alternative 5 in the current PEIS. This alternative would allow the Advanced Test Reactor at INEEL to continue producing medical and industrial isotopes for the commercial sector and would not lead to the production of anymore highly radioactive liquid waste at Hanford or INEEL. The main mission at these two facilities has been and should continue to be cleanup of the mess

2014-5  
(Cont'd)

2014-6

2014-7

**Response to Commentor No. 2014**

The Nuclear Infrastructure Nonproliferation Impact Assessment, published in September 2000, confirms that extracting plutonium-238 from irradiated targets would not undermine nonproliferation goals. In this report, DOE recognizes that proliferation concerns might be raised related to one of the technical assessment factors, "reduction in attractiveness of material forms," due to the fact that, in the extraction of plutonium-238, the remaining unconverted neptunium, a weapons-useable fissile material used as target material for conversion into plutonium-238, must also be recovered (not produced), purified, and recycled. This is unavoidable (unless the United States elects to neither produce or purchase plutonium-238), and it impacts all PEIS alternatives and options, including the No Action Alternative and Alternative 5: permanently deactivate FFTF with no new missions at U.S. facilities. However, while the fact that concerns might be raised is a valuable input to the record of decision process, it does not constitute an inconsistency with or departure from nonproliferation policy, and plutonium-238 is needed to fulfill our missions. Further, in the event that plutonium-238 production is resumed in the United States, the total separated stocks of neptunium would be reduced over time in an irreversible manner since there is a moratorium on U.S. spent fuel reprocessing. This overall reduction in a weapons-useable material would mitigate the potential concerns related to material attractiveness, and offer an additional method to pursue U.S. nonproliferation goals. DOE's proposed approach in this mission, and its rigorous nonproliferation impact assessment, demonstrate its commitment to nonproliferation policy, domestically and in the international community.

The juxtaposition of Fluorinel Dissolution Process Facility (FDPF) in INEEL Building 666 to wet storage of highly enriched uranium Navy spent nuclear fuel, and its previous mission of reprocessing spent nuclear fuel, were rigorously and objectively evaluated in the Nuclear Infrastructure Nonproliferation Impact Assessment published in September 2000. In no uncertain terms, this report discusses the proliferation concerns raised in the areas of facilitating cost-effective international monitoring and supporting negotiation of a verifiable FMCT, and outlines what is needed to mitigate these concerns. This is a valuable input to the record of decision process.

### ***Commentor No. 2014: Sally Yocum (Cont'd)***

left over from previous nuclear weapons work. Additional waste production would interfere with this already difficult and expensive work. Alternative 5 also calls for the decommissioning of the FFTF reactor at Hanford. FFTF is an aging breeder reactor whose use would be inconsistent with United States policy to discourage use of this technology due to the capability this class of reactors has to produce more plutonium than is consumed.

Thank you for the opportunity to comment on this plan.

Sincerely,

Sally Yocum  
P.O. Box 514  
Wilson, Wy. 83014  
307\_733\_6807

**2014-7  
(Cont'd)**

### ***Response to Commentor No. 2014***

Most of the concerns and uncertainties surrounding the use of FDPF are associated with its history as a defense programs facility and the resulting lack of transparency that could be afforded in the event that international monitoring becomes desirable under an FMCT. This is a different set of concerns than those expressed in the comment. The fact is, that since it is well known that FDPF has a long history of Navy defense missions, and since the described mission (plutonium-238 extraction) in the PEIS does not involve the production of special fissile material, sufficient transparency could possibly be provided by a managed access regime that would meet the requirements of FMCT verification. If this could be done, the aforementioned concerns would be mitigated.

**2014-6:** Appendix J contains a comprehensive risk analysis of all materials transported under the alternatives defined in the NI PEIS. Table J-3 lists the number of shipments and the mass of all materials shipped. The results of the risk analysis is shown in detail in Table J-7 and J-8, and summarized in Chapters 2 and 4 of Volume 1 and the Summary Volume for this PEIS. These results indicate the transportation risks would be small. The waste generated from processing of irradiated neptunium-237 targets would be vitrified and stored, onsite pending availability of a suitable repository for permanent disposal.

The DOE Manual 435.1. Radioactive Waste Management defines high level radioactive waste as the highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation. DOE has prepared an implementation guide to DOE M 435.1 to assist in implementing the requirements contained in that manual. For this particular requirement, the definition of high-level radioactive waste, the guide is intended to facilitate the classification of indefinite waste as to whether or not they are high-level radioactive waste. It is recognized that the definition of high-level radioactive waste is not precise and is essentially a source-based definition that also alludes to concentrations of a given waste stream. Page II-8 of this guide notes that for the purpose of managing high-level waste under DOE M 435.1-1 [sic], spent nuclear fuel includes spent driver elements and/or irradiated target elements that contain transuranium elements. This statement was

## ***Commentor No. 2014: Sally Yocum (Cont'd)***

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## ***Response to Commentor No. 2014***

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included in the guide because the concentrations of long-lived isotopes are likely to be somewhat high during reprocessing and it also meets the source-based definition.

As a result of reviewing this guide and to address the comments raised, DOE is considering whether the waste from processing of irradiated neptunium-237 targets should be classified as high-level radioactive waste and not transuranic waste. As a result, the Waste Management sections (i.e., Sections 4.3.1.1.13; 4.3.2.1.13; 4.3.3.1.13; and 4.4.3.1.13) of this NI PEIS have been revised to reflect this different classification from what was assumed in the draft NI PEIS. As discussed in these revised sections, irrespective of how the waste is classified (i.e., transuranic or high-level radioactive waste), the composition and characteristics are the same and the waste management (i.e., treatment and onsite storage) for this NI PEIS would be the same. In addition, even if the waste is managed as high-level radioactive waste it would have no impact on the existing high-level radioactive waste management infrastructure (e.g., high-level waste storage tanks), since the high activity waste from processing of the targets would be initially stored and vitrified within the processing facility (i.e., FMEF, REDC, or FDPF).

**2014-7:** DOE notes the commentor's support for Alternative 5, Permanently Deactivate FFTF. It should be noted that medical isotopes would continue to be produced at ATR regardless of which alternative is selected in the Record of Decision. The FFTF would produce spent nuclear fuel and low-level radioactive waste, and as discussed throughout Section 4.3 of Volume 1, none of the proposed alternatives would add waste to the high-level waste tanks at Hanford or INEEL. Also, it should be pointed out that while FFTF supported the breeder reactor program, it is not itself a breeder reactor, but rather a fast flux research reactor.

Management of wastes that would be generated under implementation of Alternative 1, Restart FFTF, is discussed in Section 4.3 of Volume 1 (e.g., see Section 4.3.1.1.13). Section 4.3.1.1.13 was revised to clarify that, the Hanford waste management infrastructure is analyzed in this PEIS for the management of waste resulting from FFTF restart and operation. This analysis is consistent with policy and DOE Order 435.1, that DOE radioactive waste shall be treated, stored, and in the case of

***Commentor No. 2014: Sally Yocum (Cont'd)***

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***Response to Commentor No. 2014***

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low-level waste, disposed of at the site where the waste is generated, if practical; or at another DOE facility. However, if DOE determines that use of the Hanford waste management infrastructure or other DOE sites is not practical or cost effective, DOE may issue an exemption under DOE Order 435.1 for the use of non-DOE facilities (i.e., commercial facilities) to store, treat, and dispose of such waste generated from the restart and operation of FFTF. In addition, Section 4.3.3.1.13 and 4.4.3.1.13 also address the potential impacts associated with the waste generated from the target fabrication and processing in FMEF and how this waste would be managed at the site.

With respect to cleanup of wastes at Hanford or INEEL, the proposed action and the existing cleanup missions are independent programs and actions related to one will not impact the other. While the cleanup activities at both Hanford and INEEL are high priority to DOE, it should be noted that the cleanup of legacy wastes is beyond the scope of the NI PEIS.



**Commentor No. 2015: Norris Palmer**

NI PEIS\_Toll Free Telephone

9/20/00

Norris Palmer  
Bingen, WA  
817\_481\_9022

Yes, my name is Norris Palmer. I've got a house in Bingen, Washington at 2222 Laurie Circle. My phone number is, you can reach me at 817\_481\_9022. I want to leave my comments on the Environmental Impact Statement. They're definitely, we're totally against it. Everybody in that area is against it. Let's not open this Hanford back up again. We can't even clean it up the way it is. It's leaking currently. If you open it back up, we need to just take it out of there. So, please do not even think of opening that place up. Put it somewhere else away from a major river, like in the middle of Texas somewhere. We'd be happy to have it there. So, please do not think of opening this thing back up. Let's spend our money cleaning it up. Thank you.

2015-1

2015-2

2015-1

2015-2

**Response to Commentor No. 2015**

**2015-1:** DOE notes the commentor's opposition to Alternative 1, Restart FFTF. FFTF is located approximately 4.5 miles from the Columbia River. There are no discharges to the river from FFTF and no radioactive or hazardous discharges to the groundwater. The environmental impacts associated with operation of the FFTF during normal operations and from postulated accidents are presented and discussed in Section 4.3 of the NI PEIS. All impacts to human health and to environmental media including air, water, and land are shown to be small.

Specific sites for the new accelerator(s), Alternative 3, and new research reactor, Alternative 4, have not been selected. If Alternatives 3 or 4 are selected for implementation, site specific NEPA documentation will be prepared prior to site selection.

**2015-2:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing activities to remediate existing contamination at Hanford are high priority to DOE. The Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement.

Hanford cleanup is funded by DOE's Office of the Assistant Secretary for Environmental Management (EM). FFTF funding is provided through the Office of Nuclear Energy, Science & Technology (NE). Further, two different congressional subcommittees oversee the appropriations for these activities. No monies have been or will be taken from any EM projects at Hanford to support the FFTF. Restart of FFTF would not impact current cleanup schedules. If the decision is made to shutdown the FFTF, then cleanup dollars will be needed to deactivate the facility, which will impact the Hanford cleanup budget.

***Commentor No. 2016: Lynn Stricker***

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NI PEIS Toll\_Free Telephone

9/19/00

Lynn Stricker  
360\_366\_9108

My name is Lynn Stricker and I'm late on leaving a comment. I would like to please shut down the FFTF reactor and focus on clean\_up. My phone number 360\_366\_9108. Thank you.

|| 2016-1  
|| 2016-2

***Response to Commentor No. 2016***

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- 2016-1:** DOE notes the commentor's support for Alternative 5, Permanently Deactivate FFTF.
- 2016-2:** See response to comment 2015-2.



**Commentor No. 2017: Floy Lilley**  
**The University of Texas at Austin**

09/20/00 07:50 512 471 5120

UT CHAIR FREE

001



COLLEGE OF ENGINEERING  
 THE UNIVERSITY OF TEXAS AT AUSTIN

Clint W. Murchison Sr. Chair of Free Enterprise  
 Petroleum/CPE 3.168 • Austin, Texas 78712 • (512) 471-7501 • Fax: (512) 471-5120

COMMENT FORM TO DOE FAX TO 301/428-1973 Cathy.H.

WE NEED THE FAST FLUX TEST FACILITY (FFTF). WE NEED THE  
 WIDE VARIETY OF ISOTOPES REQUIRED FOR LEADING EDGE  
 MEDICAL RESEARCH AND THERAPY.

WE NEED FFTF TO MAKE THE ISOTOPE OF PLUTONIUM TO  
 POWER OUR DEEP SPACE PROBE BATTERIES.

PLEASE RESTART FFTF.

ANY SCARE OVER FFTF HAVING TO DO WITH WEAPONS IS  
 FALSE. THIS NEWEST OF ALL DOE REACTORS HAS NEVER BEEN  
 A DEFENSE REACTOR.

RESTORE OUR NATION AS THE ACKNOWLEDGED LEADER IN  
 NUCLEAR SCIENCE AND TECHNOLOGY. SAVE LIVES. SAVE  
 SCIENCE. RESTART FFTF.

FLOY LILLEY, J.D.  
 MURCHISON CHAIR OF FREE ENTERPRISE  
 PETROLEUM/CPE 3.168 C0300  
 THE UNIVERSITY OF TEXAS  
 AUSTIN, TX 78712

09-07-00P

512/471-7501  
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College Affiliates: College of Engineering, College of Business Administration, College of Commerce, Austin, College of Education,  
 College of Liberal Arts, College of Natural Sciences and Lyndon B. Johnson School of Public Affairs

**Response to Commentor No. 2017**

2017-1

2017-1: DOE notes the commentor's support for Alternative 1, Restart FFTF.

***Commentor No. 2018: Derek Campbell***

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From: derek campbell[SMTP:ACOUJAM@HOTMAIL.COM]  
Sent: Thursday, September 21, 2000 10:28:34 AM  
To: INFRASTRUCTURE\_PEIS, NUCLEAR  
Subject: ?Check\_Subject  
Auto forwarded by a Rule

Just another citizen expressing opposition to nukes in space.  
Please find alternatives for the sake of us all.

Thank you,

Derek Campbell

**2018-1**

***Response to Commentor No. 2018***

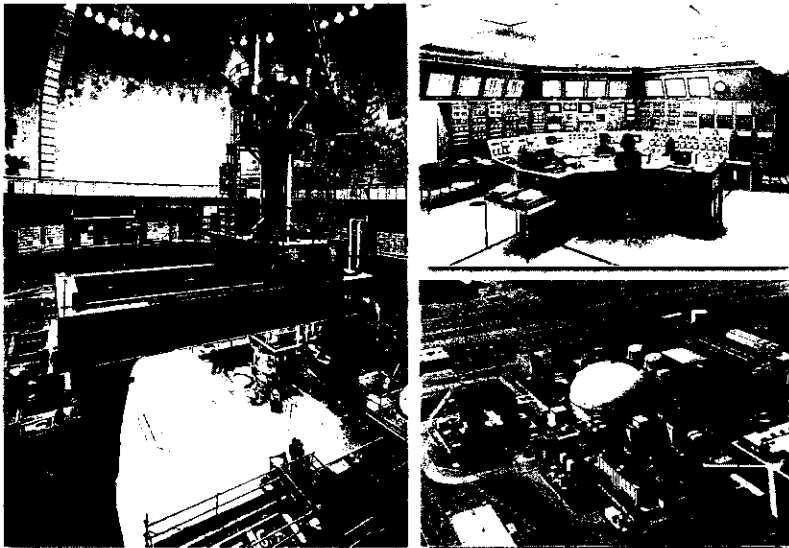
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**2018-1:** As part of its charter under the Atomic Energy Act, DOE and its predecessor agencies have been developing and supplying radioisotope power systems to NASA for space exploration for more than 30 years. It should be noted that NASA and not DOE determines the need for space power systems. When such a power system is required, NASA utilizes the NEPA process to evaluate all reasonable alternatives. Plutonium-238 sources are used when it is the only mission enabling technology or enhances mission capabilities. As stated in Section 1.2.2 of Volume 1, research has been conducted to identify other potential fuel sources to support these space exploration missions, but no viable alternative to using plutonium-238 has been established.

*Commentor No. 2019: Mary Lou Blazek  
Oregon Office of Energy*

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**THE  
OREGON  
APPROACH:** Involving the Public  
in DOE's Nuclear  
Infrastructure Proposals  
Including Use of the  
Fast Flux Test Facility



**OREGON OFFICE OF ENERGY**

**September 2000**

*Response to Commentor No. 2019*

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***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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**THE  
OREGON  
APPROACH:** **Involving the Public  
in DOE's Nuclear  
Infrastructure Proposals  
Including Use of the  
Fast Flux Test Facility**

A report to the U.S. Department of Energy  
from the Oregon Office of Energy  
September 2000

Many people played a role in helping the Oregon Office of Energy test a new way to gather public opinion on Hanford issues. We thank them all. In particular, we would like to recognize the invaluable efforts of DOE/FFTF project staff member Al Farabee and participants Steve Binney, Adam Bless, Barbara Clark, Janet Franco, and Greg DeBruler.

To view this report on-line, please visit <http://www.energy.state.or.us/nucsaf/nucsaf.htm>. For more information about the report, please contact Mary Lou Blazek by telephone at (503) 378-5544, by e-mail at [mary.l.blazek@state.or.us](mailto:mary.l.blazek@state.or.us), or in writing at Oregon Office of Energy, 625 Marion St. N.E., Suite 1, Salem, Oregon, 97301-3742.

This report was prepared with funding from the U.S. Department of Energy. Any opinions, findings, conclusions or recommendations expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Energy.

***Response to Commentor No. 2019***

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**Commentor No. 2019: Mary Lou Blazek (Cont'd)**  
**Oregon Office of Energy**



**Oregon**

John A. Kitzhaber M.D., Governor

**Office of Energy**  
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September 15, 2000

Ms. Collette Brown  
 Office of Nuclear Energy,  
 Science and Technology (NE-50)  
 US Department of Energy  
 19901 Germantown Road  
 Germantown, MD 20874

Dear Ms. Brown:

Enclosed is our report "*The Oregon Approach: Involving the Public in DOE's Nuclear Infrastructure Proposals Including Use of Fast Flux Test Facility*." This report summarizes the results of an extensive public involvement effort to include Oregonians in evaluating the adequacy of the draft Programmatic Environmental Impact Statement (Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the U.S., Including the Role of the Fast Flux Test Facility). Our report includes public input on whether to restart the Fast Flux Test Facility. This information was collected from 20 focus groups in six Oregon communities. The public input provided in this report should be considered public comment on the Draft PEIS.

The report also provides a description of our process which involved a good number of Oregonians who had not previously commented on Hanford issues. I think you'll agree that the project and report provide you with meaningful public comment that DOE would not have otherwise received.

Sincerely,

Mary Lou Blazek, Administrator  
 Nuclear Safety Division

**Response to Commentor No. 2019**

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix D

#### FOCUS GROUP ROUND ONE QUESTIONS

##### Key to Focus Group Abbreviations

OHSU = Oregon Health Sciences University  
 CCS1 = Community Cross Section Group 1 (Portland)  
 CCS2 = Community Cross Section Group 2 (Portland)  
 MD = Market Decisions (Multnomah, Clackamas, Washington, Yamhill, Columbia Co.)  
 HW = Hanford Watch  
 OOE = Oregon Office of Energy (non-nuclear staff)  
 C/A = Umatilla and Morrow County community leaders and agricultural interests  
 E = Engineers  
 OR = State of Oregon

Focus Group	Question/Issue Not Anticipated to Answer	Comments/Notes
1. OHSU	Does FFTF produce electricity?	No.
2. OHSU	Where did the tritium mission from FFTF's earlier proposals go?	To commercial reactors at Tennessee Valley Authority.
3. HW	Will PNNL be involved in the restart decisions? Will PNNL benefit from restart? Is there a conflict of interest?	The decision will be made by DOE headquarters. PNNL evaluated FFTF for restart and may be part of the operating group. The conflict of interest question is unclear.
4. HW	What is Gov. Kitzhaber's position on the restart of FFTF?	Currently, there is no official position on the restart of FFTF. In the past, the Governor opposed restart of FFTF to produce tritium. That mission is no longer proposed. The Governor will use the results of these Oregon focus groups along with staff's technical evaluation to guide his decision on this EIS.
5. HW	Will OOE demand a cumulative impacts analysis?	OOE will encourage USDOE to conduct a cumulative impacts analysis.
6. HW	Will OOE declare the EIS "illegal?"	No. The Attorney General makes legal decisions for the state.
7. HW	Will OOE articulate the public's opposition and Portland City Council's resolution against restart?	OOE will convey all the messages we've heard concerning restart of FFTF including these focus groups, the Portland City Council resolution, and others.
8. C/A	Does FFTF generate waste in standby mode?	Yes. Contaminated low level wastes are generated. Some radioactivity remains from past operations. Spent fuel from reactor is currently being processed for dry cask storage. This process generates caustic soda as a mixed waste.
9. CCS1	Can we process existing waste to get Pu238?	No, not from the waste at Hanford.
10. HW	What is Yttrium-90 that Hanford sells used for?	According to the Nuclear Medicine Research Council web site ( <a href="http://www.cbvsp.com/nmrc/mia.html">http://www.cbvsp.com/nmrc/mia.html</a> ), Y-90 is used for "Internal radiation therapy of liver cancer, monoclonal antibodies, Hodgkin's disease, and hepatoma. Cellular dosimetry, treating rheumatoid arthritis, treating breast cancer, treatment of gastrointestinal adenocarcinomas."

## Response to Commentor No. 2019

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

## Response to Commentor No. 2019

Appendix D

#	Topic Group	Policy Issue/Intended Question	Comments/Notes
1.	OOE	If these missions go elsewhere, will that have an impact on (reduce) Hanford's budget?	There is the possibility that building of new DOE facilities such as a reactor or an accelerator might impact cleanup budgets complex wide.
2.	OCS2	Does use of FFTF focus attention and funding on Hanford and thereby help cleanup?	While it certainly may focus attention on Hanford it won't likely help the cleanup budget.
3.	OHSU, OOE, OCS1, OCS2, C/A	Is there a way to keep cleanup funds from being diverted to FFTF?	DOE's current plan for this is to fund FFTF from a separate part of DOE – Nuclear Energy vs. Environmental Management.
4.	OOE	If FFTF is re-started, could DOE then change its position and use the reactor for tritium production after all?	Not without going through the NEPA process to change the Record of Decision that sent this mission to TVA. However, it is possible that classified missions could be performed at FFTF without public input once it is re-started. (Post-meeting clarification: FFTF could not restart for defense missions without another EIS.)
5.	OCS1	If FFTF was built for the breeder reactor program which ended, if they restart could they use it for a breeder program again?	Yes, it would be possible to use the reactor to conduct research into breeder reactor materials, etc. However, it is highly unlikely this would occur since there is no breeder reactor program in progress in the US and it is very unlikely that there ever will be again. Note that FFTF is NOT a breeder reactor itself.
6.	OOE, C/A	Why has there been such a push to re-start the reactor? Is proposal for restart driven by politics, economics, or a business plan?	Part of DOE's official mission is to ensure an adequate supply of medical isotopes and an adequate nuclear research infrastructure in the US. The reason for the push to restart FFTF is many people feel that it is the best facility to accomplish these purposes in the US.
7.	OCS2	What is the larger public purpose of government facilities? Sometimes a federal vision/subsidy addresses things not commercially feasible or things the private sector cannot/will not undertake.	See the answer for the above question.
8.	C/A	What are we doing (differently) now to avoid the cleanup problems generated in the past?	FFTF is developing a Waste Minimization and Management Plan to help minimize the impact of FFTF's wastes on existing wastes. Currently, regulations on waste are much more stringent than they used to be and the public is much more aware of the dangers of these materials. However – wastes will be generated, and there will be an impact on current waste levels. The significance of this is controversial.
9.	C/A	Is the proposed FFTF mission(s) the only mission at Hanford other than cleanup?	In addition to cleanup there are various research missions going on. There is a commercial low-level radioactive waste dump in operation at Hanford, and there is a commercial nuclear power plant on Hanford site generating electricity for the region's power grid that are not DOE facilities.
10.	OCS2	Is Pu-238 a defense related mission for which the DOD should pay some of the cleanup costs?	This argument could be made if these generators are used in military satellites.

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

Appendix D

1.	OHSU, C/A, OOE	What will happen to wastes from FFTF operations?	According to the latest version of FFTF's plan: Spent Nuclear Fuel would be stored on-site in dry storage casks, the disposition of the Transuranic Waste from target processing is unclear, low level waste will be disposed of at a commercial facility.
2.	OHSU	What kinds of "international research" are being considered for the new FFTF mission?	These research missions generally involve materials research. In other words, people want to know how a certain metal will behave when bombarded by radiation. This type of research is generally aimed at improving the strength of materials used in nuclear reactors.
3.	OHSU, HW, CCS2, C/A	What isotopes are proposed for FFTF; where are those isotopes currently produced; what are long range plans for each of those production facilities?	See table 1-1 in the EIS. Some examples are: Actinium-227, Iodine-131, Iridium-192, Krypton-81m, Rhenium-186, Thorium-228. Some of these are currently available commercially such as Iodine-131 and Iridium-192. These are generally produced in a Canadian reactor or by buying space in a research or DOE reactor. For example - OSU has produced some medical isotopes in its research reactor.
4.	OOE, HW, CCS2	What is the need for medical isotope production?	This is controversial - some studies indicate there is a need, others indicate there isn't. Currently we buy many of our isotopes from Canada.
5.	OOE, HW, CCS2	What isotopes are currently being used for medical research and treatment?	Currently three radioisotopes dominate therapeutic applications: Iodine-131, Yttrium-90, and Phosphorus-32. Others in use are Strontium-89, Samarium-153 and Rhenium-186. These are currently in commercial production.
6.	HW, CCS1, C/A	What wastes and how much of each would be produced? Will liquid wastes be produced?	The following wastes would be produced: Spent Nuclear Fuel - 16 metric tons of heavy metal, Transuranic Waste from target processing, (numbers unavailable), Low-Level Radioactive Waste - from both target processing and operation of FFTF (about 23 cubic meters total for FFTF - numbers not available for processing facilities) Liquid wastes will be produced by both FFTF and the processing facilities. FFTF's liquid waste will be stabilized by drying and then it will be handled as dry waste. The processing liquid wastes have an unclear path.
7.	C/A	Is FFTF ready for proposed missions or would it have to be retrofitted?	It could physically perform the missions as it is without much retrofitting. However, there are plans to upgrade the control and protection systems since they are older technology and modify the reactor to allow on line insertion and retrieval of targets.
8.	C/A	How much waste would be generated from creating targets vs. processing targets?	More waste would be generated in the processing of targets than in the creation of them. Actual numbers are not provided in the EIS.
9.	HW	What type of fuel will be used? Can the fuel also be used for bomb production?	There are actually two plans for fuel. Both begin with using the current stocks on hand (about 6 years worth). This is Mixed Oxide (MOX) fuel - a mixture of plutonium and uranium. Once this fuel is exhausted there are two options - import MOX fuel from Germany or use domestically produced Highly Enriched Uranium (HEU) fuel. Both types of fuel contain weapons type materials. The fuel itself could not be used for bombs without significant re-processing.
10.	CCS1	Where will the fuel come from?	See above.
11.	HW	What alternate uses are being considered for FFTF?	Other than the missions discussed in this EIS, no alternate uses are being considered at this time.

## Response to Commentor No. 2019

- 2019-1:** Management of wastes that would be generated under implementation of Alternative 1, Restart FFTF, is discussed in Section 4.3 of Volume 1 (e.g., see Section 4.3.1.1.13). Section 4.3.1.1.13 was revised to clarify that, the Hanford waste management infrastructure is analyzed in this PEIS for the management of waste resulting from FFTF restart and operation. This analysis is consistent with policy and DOE Order 435.1, that DOE radioactive waste shall be treated, stored, and in the case of low-level waste, disposed of at the site where the waste is generated, if practical; or at another DOE facility. However, if DOE determines that use of the Hanford waste management infrastructure or other DOE sites is not practical or cost effective, DOE may issue an exemption under DOE Order 435.1 for the use of non-DOE facilities (i.e., commercial facilities) to store, treat, and dispose of such waste generated from the restart and operation of FFTF. In addition, Section 4.3.3.1.13 and 4.4.3.1.13 also address the potential impacts associated with the waste generated from the target fabrication and processing in FMEF and how this waste would be managed at the site.
- 2019-2:** Researchers from many foreign countries use DOE's high-flux research reactors for materials testing and experimentation. These facilities have the capability to maintain a high density of neutrons in a given test volume for materials testing; shorten the time needed for such testing; tailor the neutron flux to simulate the different reactor types and conditions; and instrument the core for close monitoring of the test conditions. Although the NI PEIS analyzes the expansion of U.S. civilian nuclear research and development, it is anticipated that FFTF would play a role in the continuing international research conducted in the United States. As described in Section 1.2.3 of the NI PEIS, some specific areas of research identified are advanced reactor development including materials and nuclear fuel research for advanced terrestrial or space reactors and for the Accelerator Transmutation of Waste system.
- 2019-3:** For purposes of analysis in the NI PEIS, a representative set of isotopes was selected on the basis of recommendations of a thirteen member Expert Panel convened by DOE in 1998 to forecast future demand for medical isotopes, medical market forecasts, reviews of medical literature, and more than 100 types of ongoing clinical trials that use radioisotopes for the treatment of cancer and other diseases. These 37 representative isotopes are listed in Table 1-1 of the NI PEIS, along with a brief description of their medical and, in some cases, industrial applications. Some examples of isotopes included in the table



## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

Appendix D

		QUESTIONS/COMMENTS	RESPONSES/NOTES
12.	HW	Are some of the alternatives more easily adapted to future weapons related missions?	It would be easiest to conduct classified missions in FFTF, or another DOE controlled facility due to DOE's control and self-regulation status.
13.	HW	Is the FFTF reactor safe to operate?	The FFTF reactor is about 25 years old and its protection and control technology is of this vintage. There are commercial reactors operating safely with this technology.
14.	HW	Are the costs of making FFTF safe for particular missions included in the proposals?	We don't know -- we haven't seen the cost data yet. The latest word is that the cost study would be released September 5.
15.	HW	What other nuclear sites in the U.S. may be used for the proposed missions. What other facilities at the Hanford Site?	The sites with existing reactor facilities analyzed in this EIS are Hanford, Idaho National Engineering and Environmental Laboratory, the Oak Ridge Reservation in Tennessee, and a generic commercial light water reactor site. Processing facilities analyzed are at Hanford, Idaho, and Oak Ridge. The EIS discusses a generic DOE site for the possible construction of a new research reactor or accelerators.
16.	HW	Can the isotopes be produced elsewhere in the same amounts?	The EIS makes the statement that current facilities are unable to meet the demand for isotopes. The demand is currently being met mainly by purchase of isotopes from Canada. There are no commercial facilities in the U.S. now dedicated to the production of medical isotopes.
17.	HW	Can they use the large volume of waste at Hanford to process at FFTF and make something useful and profitable?	In general, no. Some things have been extracted from the waste in the past -- Cs and Sr, but it wasn't profitable.
18.	HW	How much Pu-238 will be produced; is there any foreign opposition?	The current EIS envisions 175 kilograms of Pu-238 being produced over a 35 year period. No foreign opposition that we are aware of.
19.	MD	Where else can Pu-238 be produced?	Pu-238 could be produced in another research type reactor, in a commercial light water reactor or in an accelerator.
20.	CCS1	Are there other materials besides Pu-238 that could be used for the space mission?	From a radioisotope standpoint, in theory -- any material that generates heat as it decays could be used. Practically, Pu-238 is probably the best material as other materials don't have as high a heat generating capacity and so would require bigger, bulkier batteries. Solar panels have, until recently (about 1995), been too inefficient.
21.	MD, OOE, CCS1, CCS2, OR, C/A	What will these proposals for FFTF cost (including startup, operation, shut-down, decommissioning)?	We haven't seen the cost data. The latest information we have is that this data will be released September 5.
22.	C/A	Will the government recoup its costs for this project?	It is the intention of the project to recoup its operating costs, but we are skeptical this can be done. The 35-45 million dollars per year spent thus far on keeping it in standby is not included in this.

2019-8  
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2019-15

## Response to Commentor No. 2019

are Actinium-227, Iodine-131, Iridium-192, Krypton-81m, Rhenium-186, and Thorium-228. Currently, the medical applications for the representative isotopes primarily involve the diagnosis and treatment of three major classes of disease - cancer, vascular disease, and arthritis. Although these isotopes are a representative sample of possible isotopes that could be produced, DOE expects that the actual isotopes that would be produced at FFTF would vary from year to year in response to the focus of clinical research and the specific market needs occurring at that time.

The United States currently purchases approximately 90 percent of its medical radioisotopes from foreign producers, most notably Canada. Although other manufacturers produce medical radioisotopes, DOE remains the key provider for a large number of radioisotopes that are used in relatively small quantities by individual researchers at universities and hospitals. Because their application is initially experimental, these isotopes are not generally purchased in large-enough quantities to make their production financially attractive to private industry.

Supplies of many research isotopes are not readily available from existing domestic or foreign sources, causing a number of medical research programs to be terminated, deferred, or seriously delayed. Under the NI PEIS proposed action and consistent with its mandates under the Atomic Energy Act, DOE would enhance its existing nuclear facility infrastructure to, among other things, more effectively support production of radioisotopes for medical applications and research. DOE's intent is to complement commercial sector capabilities to ensure that a reliable supply of isotopes is available in the United States to meet future demand, and to encourage the commercial sector to privatize the production of isotopes that have established applications to a level that would support commercial ventures.

A forecast for future demand for medical isotopes and the expected growth rate of medical isotope use during the next 20 years is provided in Section 1.2 of the NI PEIS. The growth projections were adopted by DOE as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings.

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

Appendix D

#	Focus Group	Questions/Comments to be Addressed in EIS	Comments/Notes
23.	C/A	What does it cost to operate FFTF in standby mode?	About 35 to 45 million dollars a year.
24.	OR, C/A	Can we be sure operation of FFTF will not compromise Hanford cleanup funding, schedule or resources?	No.
25.	CCS2	Does EIS address suitability of FFTF for medical isotope production	In a general way. It does not do a detailed analysis of the suitability. In particular, there is no discussion of whether the advantages of fast neutrons are significant enough to warrant using this reactor, there is no discussion of the economics of using a reactor of this size for these missions. This material may be discussed in the economic information due out Sept 5.
26.	CCS1	Will the EIS assume all proposed missions are viable?	Yes. The EIS makes the assumption that these missions will be done and then analyzes their viability at various possible sites.
27.	OR	Does FFTF represent the best choice for any mission from economic, technical, public health & safety, and environmental standpoints.	This question is still under consideration. The Oregon Office of Energy is reviewing each mission to determine what we think is the most suitable facility rather than try to fit all the missions in at one facility. For example, using this criteria, a commercial light water reactor might be the best place for the Pu-238 mission.
28.	OR	Does the EIS include a broad selection of options including other DOE and private sites and modification of existing reactors and accelerators to meet the stated needs?	Yes – the EIS analyzes essentially about 21 different combinations of irradiation and processing facility options.
29.	CCS1, OR, E	Is there a compelling need for these missions?	For the medical isotopes there are conflicting reports, but due to the possibility that these materials could save lives, we will concede this point. For the other missions, there are alternatives such as purchase of materials from Russia. We will study this issue further before we make our recommendation to the Governor.
30.	OR	Has there been a detailed examination of DOE's projections for irradiation needs?	No, the EIS proceeds from the assumption that the needs are real and that these missions will be accomplished.
31.	OR	Has there been a thorough examination of all potential impacts of FFTF operations on all current and projected Hanford cleanup operations?	No. In particular, cost data and financing plans are still unavailable. The Waste Minimization and Management Plan is still in draft form and does not consider processing wastes in any detail.

## Response to Commentor No. 2019

- 2019-4:** The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed action for all alternatives and alternative options. Waste volumes (both liquid and solids) are provided in Chapter 4 of the NI PEIS for each of the alternatives and alternative options under the Waste Management Sections. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.
- 2019-5:** FFTF can physically perform the missions in its current state without much retrofitting. However, there are plans to upgrade the control and protection systems since they are older technology, and modify the reactor to allow online insertion and retrieval of targets. These modifications are discussed in Section 2.3.1.1.2 of the NI PEIS.
- 2019-6:** The NI PEIS provides a total waste volume (by waste types) generated by the target processing and fabricating activities. However, these numbers are not broken out by these two activities since one would not be done without the other.
- 2019-7:** If a decision is made to restart FFTF, the first six years of operation would use existing onsite mixed oxide fuel. DOE expects that an additional 15-year supply of mixed oxide fuel in Europe, owned by Germany, would be available for FFTF. MOX fuel does not use highly enriched uranium. Further, use of the Hanford MOX fuel would dispose of a significant U.S. stockpile of highly attractive fresh plutonium fuel by conversion to spent fuel through irradiation in FFTF. This represents a safe, low-cost, high benefit opportunity to reduce U.S. civilian plutonium without chemical or bulk processing. Use of the German MOX represents a similar advantage with respect to the German stockpile of separated civilian plutonium. During the period of MOX fuel use, in support of U.S. nonproliferation policy directives, DOE's Office of Nonproliferation and National Security would undertake a study under Reduced Enrichment for Research and Test Reactors (RERTR) to consider the technical feasibility of using low enriched uranium to fuel the FFTF. Under this nonproliferation protocol, if use of low enriched uranium fuel is found infeasible in

**Commentor No. 2019: Mary Lou Blazek (Cont'd)**  
**Oregon Office of Energy**

Appendix D

Item	Topic Group	Questions/Comments/Issues Addressed in PEIS	Comments/Notes
32.	CCS2	Is the need to have trained people for any given mission at FFTF an argument for the missions?	No. This argument is not used in the EIS.
33.	C/A	How many people are employed by FFTF in standby mode? How many would be employed in operational mode?	Currently estimate about 120 workers at FFTF in standby. Operation would probably increase that number to about 250 to 300.
34.	C/A	Who pays for socio-economic impacts on Oregon local and county governments?	Other than possibly increased payments in lieu of taxes to Washington counties, there is no payment for socio-economic impacts. The EIS states that these impacts would be very small and absorbed within the normal population fluctuations for the area.
35.	C/A	Will FFTF operation mean more radioactive waste shipments on Oregon highways?	Yes. This increased transportation would at least involve shipment of FFTF's products to end-users. Additional transportation of radioactive materials would occur if the targets are fabricated and/or processed at a location other than Hanford itself. Also, much of FFTF's wastes are slated to go to a commercial repository. This could possibly involve transport of this waste to the repository through Oregon.

2019-24

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2019-26

**Response to Commentor No. 2019**

FFTF for meeting assigned missions, policy would allow DOE to subsequently procure highly enriched uranium fuel for use in FFTF. Again, this approach is consistent with U.S. nonproliferation policy.

The use of mixed oxide or highly enriched uranium to fuel the FFTF has been rigorously evaluated in the Nuclear Infrastructure Nonproliferation Impact Assessment which was published in September, 2000. This report confirms that the manner in which these fuels would be used, as described in the PEIS, is consistent with nonproliferation policy

**2019-8:** Other than the missions discussed in the NI PEIS, no alternate uses for FFTF are being considered at this time. None of the alternatives in the NI PEIS include defense missions nor would any contribute to future weapons production. All missions considered in the NI PEIS are for civilian purposes.

**2019-9:** To address the question of whether it is safe to restart the FFTF, the risks associated with the restart of the FFTF have been analyzed in the NI PEIS. These risks include the impacts from normal operations, accidents, and the transportation of material (new and spent fuel, medical isotopes) to and from the facility. Information on each of these impacts is presented in Chapter 2, Chapter 4, and Appendixes H, I, and J of the PEIS. These risks have been presented in terms of the risk of additional fatalities (in most cases additional cancer fatalities) should the reactor be restarted. In all alternatives that include the restart of the FFTF, the most likely result of implementation of the alternative is that there will be no additional fatalities.

The FFTF can be operated safely to accomplish the mission as described in the NI PEIS. The analyses presented in this NI PEIS reflect the proposed changes to the reactor core (including fuel and irradiation targets) to perform the stated missions. In the event that FFTF restart is selected in the Record of Decision, a new Safety Analysis Report, including a Probabilistic Risk Assessment (PRA), will be prepared and it will address any changes in plant configuration, operating conditions and procedures. The revised safety analyses will be subjected to a thorough independent review process.

**2019-10:** The costs of FFTF restart presented in the Cost Report include facility and safety modifications as well as revision of the Safety Analysis Report.

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

#### FOCUS GROUP ROUND TWO ORAL COMMENTS

#### CITIZEN QUESTIONS AND COMMENTS TO BE ADDRESSED

##### Questions/comments on EIS purpose, assumptions and structure

- Until I read the EIS, I really did assume this was about the missions. It was only when I read it that I understood: No, it begins with the assumption that the purpose is to "enhance our domestic infrastructure capability." Once I got that in my head, I realized this is just a setup. Once that's established as the goal, it's just a matter of assembling the right information and numbers. Again, I'm reacting pretty strongly to the basic logic of the EIS. I disagree with this fundamental assumption.
- I want to react to a comment that really bothered me about the EIS's examination of validity. Until I read the EIS I was prepared to believe that. But it is, in my estimation, a very bad sales document, larded with all kinds of things about the need to maintain U.S. technology leadership in biomedical research and justification for reinvigorating the nuclear power industry. I found it offensive as a promotional document rather than an EIS. I'm reacting to the comment that it doesn't examine the validity of the proposed mission. In fact, it tries to sell us on those and I think it failed badly.
- I disagree with the assumption that enhancing sole U.S. technical capacity is a correct beginning assumption when so much of where we're going is the opposite direction in terms of both medical needs and something like space exploration with international cooperation, for example. It just seems obvious. The notion that somehow we need to capture the technology for doing medical isotope work in the U.S. and keep it from other people given the health needs of the world is just wrong-headed. Why aren't we exploring how we can do these things internationally in a way for cost reasons, for humanitarian reasons, for international relations reasons, for all kinds of reasons? The notion that we don't want to rely on Canada or we don't want to share this stuff is just flat-out wrong-headed.
- The EIS was not a 'programmatic' EIS. It did not address the overall program. This is just a political document that biased the ability of an EIS to look at the situation. When you get to this issue about reviewing the mission, it seems to me that we have not dealt with the program issues in the EIS the way an EIS ought to deal with them.
- They didn't really broaden the list of options. They just sliced and diced the same proposals more finely. If they really set out to accomplish the expansion of options, you wouldn't end up with this EIS.
- The draft EIS appears to be a justification for the restart of FFTF hidden in an invented need to improve the U.S. nuclear infrastructure. That makes us uncomfortable.
- EIS's are not always objective. You cannot assume that a given EIS is objective.
- Some of the technologies we've discussed are not considered in the EIS – like more, smaller production facilities instead of one or two large scale facilities.

## Response to Commentor No. 2019

**2019-11:** Sites with existing reactor facilities analyzed in this EIS are Hanford, INEEL, and ORR, and a generic CLWR. Processing facilities analyzed are at Hanford INEEL, and ORR. The NI PEIS discusses a generic DOE site for possible construction of a new research reactor or accelerator(s). DOE also analyzed a number of other sites and facilities within the DOE complex; however, these were dismissed for a variety of reasons as stated in Section 2.6.

**2019-12:** For nearly 50 years, DOE's use of its unique technologies and capabilities to develop isotopes for civilian purposes has enabled the widespread application of medical isotopes seen today. While its market share is a small fraction of total world radioisotope production, DOE remains the key provider for a large number of radioisotopes that are used in relatively small quantities by individual researchers at universities and hospitals. Because their application is initially experimental, these isotopes are not generally purchased in large-enough quantities to make their production financially attractive to private industry.

The United States currently purchases approximately 90 percent of its medical radioisotopes from foreign producers, most notably Canada. However, supplies of many research isotopes are not readily available from existing domestic or foreign sources, causing a number of medical research programs to be terminated, deferred, or seriously delayed. Under the NI PEIS proposed action and consistent with its mandates under the Atomic Energy Act, DOE would enhance its existing nuclear facility infrastructure to, among other things, more effectively support production of radioisotopes for medical applications and research.

It appears from the flow of the commentor's comments that the question can be rephrased as "Can the isotopes produced by FFTF be produced elsewhere in the same amounts?" Operational facilities in the United States jointly do not have the available production capacity to match the variety and quantity of isotopes that could be produced at FFTF.

**2019-13:** DOE notes the commentor's interest in processing nuclear wastes into useful products. In general, issues of waste processing are beyond the scope of this Nuclear Infrastructure PEIS. Normally pure target materials are selected for irradiation for the production of isotopes to assure that relatively pure materials are produced. Transmutation of nuclear wastes research and development experiments could be supported by FFTF.

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

- Is there legal ground on which we can call this PEIS inadequate given that the cost study is late and non-proliferation is not available?
- How can DOE do an EIS that only evaluates effects for 35 years?
- Is there anything in the PEIS that allows the missions to be separated?
- Does (the EIS) assess questions like the fact that there is no permanent waste storage for this stuff here or anywhere else that is satisfactory? Do they talk about the impacts of waste that is not properly stored?

### Questions/comments on the cost and non-proliferation studies and on general costs

- It is unacceptable for the public to be presented with an EIS lacking the cost and proliferation studies. The public has a right to see the costs involved before DOE makes a decision. The current process or policy of separating these facets out is part of the duping of the American public. Trust in our government is a thing of the past because of the way the DOE does business.
- If cost figures are not available for the DOE public meetings, it's a big waste of time.
- It is a waste of money to just let FFTF sit in standby. We need to spend the money to either run it or permanently shut it down.
- Of what value is the EIS without the cost study?
- There is not enough information to comment on the questionnaire on the economic viability of the alternatives because no economic information is included in the PEIS.
- The cost figures on the internet are shocking.
- Why did DOE fail to give us the cost and non-proliferation documents? How could DOE not provide this key information after the public asked for it as part of scoping?
- We need cost estimates on the use of the canister storage building to accommodate this new waste. It will be huge. It will also be hard to track costs because of the way DOE funding is decentralized.
- Some believe (restarting FFTF) would have a positive socio-economic impact.
- I am appalled at the amount of money this nation is spending (I wish they would put those costs in the EIS) on standby equipment for nuclear facilities, not just at Hanford. It's this great idea that if we keep all this on standby, our industry will eventually be able to make the leap and move forward.
- What is the likelihood that budget projections made today will hold true over a 35-year project?
- Is the agreement to pay for dismantlement of FFTF from the Nuclear Energy, Science and Technology

2019-32

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2019-42

## Response to Commentor No. 2019

**2019-14:** The NI PEIS projects that approximately 175 kilograms of plutonium-238 would be produced over a 35-year period. At this time, DOE is not aware of any foreign opposition to this mission.

Plutonium-238 can be produced in FFTF, another research reactor, a commercial light water reactor, or in an accelerator. Although research to identify other potential fuel sources to support these space exploration missions has been conducted, no viable alternative to using plutonium-238 has been established. DOE could purchase plutonium-238 from Russia to satisfy its responsibility to supply NASA with the necessary fuel to support future space exploration missions. Under the current contract set to expire in 2002, the United States is authorized to purchase up to 40 kilograms of plutonium-238, with the total available for purchase in any one year limited to 10 kilograms. However, DOE does not stockpile large quantities of Russian plutonium-238 long in advance of needs due to budget constraints and the additional processing required to remove decay products that occur following extended storage of the material. To date, DOE has purchased approximately 9 kilograms of plutonium-238 under this contract. Future purchases under the current contract with Russia are negotiable through calendar year 2003. DOE recognizes that this is a viable option and has analyzed this option under the No Action Alternative.

**2019-15:** The costs of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such an ancillary document need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed this document to about 730 interested parties on August 24, 2000. The report was made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. The cost report contains costs for FFTF standby mode, startup, operation, and deactivation. Since all of the missions are not generate revenue, DOE will not recoup its costs for the project. DOE has provided a summary of the Cost Report in Volume 2, Appendix P.

**2019-16:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

budget enforceable and permanent?

2019-42  
(Cont'd)

### Questions/comments on selecting an alternative

- Now that the suboptions for each alternative are identified, has a rational decision making process been used, i.e., the Kepner/Traigo methodology, to make a decision?
- The U.S. Department of Energy needs to adequately address all of the unknowns prior to choosing any option.
- The 'no action' alternative should refer action back to prior decisions. 'No action' should mean that FFTF is shut down now. They must not continue to spend these huge sums of money to keep FFTF on standby.
- I'm concerned that the EIS is written to point to alternative one as the de facto preferred alternative. The EIS is difficult for a lay person to read.
- Do they address the suitability of any sites other than FFTF?
- Why are there so many options under each alternative?

2019-43

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### Questions/comments on medical isotopes

- I'm concerned about the physician experts who don't have breadth of vision. They are very narrowly focused and don't think of the broader societal issues. We are at crisis in medical technology. They need to say there are certain procedures we will not do. It is difficult to see a medical need for this isotope phenomena.
- Adding to the stream of nuclear waste so that older men can have erections doesn't seem right" (in reference to a statement that most isotopes are being used for prostate cancer therapy).
- What we need to do is ask whether there are other means to accomplish the research without the nuclear materials. The damage to the populace in the present may not be worth the potential future benefit from the nuclear materials.
- DOE needs to look into the reliability for predicting isotopic needs for future uses in research and medicine as it appears impossible to project an accurate need out more than three years.
- One consideration might be that medical isotope production is less hazardous to workers and the environment as opposed to plutonium production. Biologic and radiation hazards are greater.
- It doesn't make sense to not have any data on the need for industrial isotopes.
- FFTF could make research isotopes, but it would be overkill. Like digging a post hole with a backhoe.

2019-47

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2019-49

### 24 THE OREGON APPROACH

## Response to Commentor No. 2019

Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

The U.S. Congress funds the Hanford cleanup through the Office of the Assistant Secretary for Environmental Management (EM), and the FFTF through the Office of Nuclear Energy, Science and Technology (NE). The nuclear infrastructure missions described in Section 1.2 of Volume 1 would also be funded by NE, which has no funding connection to Hanford cleanup activities. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

**2019-17:** As discussed in Chapter 2 of the NI PEIS, FFTF has demonstrated its capability to function as a nuclear science and irradiation services user facility. Its large core size, flux spectrum, demonstrated testing capability, and rated power levels provide a multipurpose facility suitable for medical and industrial isotope production, plutonium-238 production, and nuclear research and development related to a broad range of materials, advanced reactors, advanced fuels, and waste transmutation. Although FFTF was used primarily to evaluate reactor fuels and different fuel assembly materials during its 10 years of operation, the reactor facility has also supported large and varied test programs for industry, nuclear energy (domestic and international), medical isotope applications and research, space nuclear power, and fusion research programs. A more detailed description of FFTF and its capabilities is included in Appendix D of the NI PEIS.

**2019-18:** All the alternatives evaluated for meeting requirements of the missions identified in the PEIS are reasonable.

**2019-19:** A preferred alternative is the alternative an agency believes best accomplishes the proposed actions, given consideration to environmental, technical, economic, and other information available at

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

- You can have both (the isotope and plutonium 238) missions by using two different reactors.
- We should use existing research reactors to make medical and research isotopes.
- Did National Institutes of Health say we need more isotopes? NERAC says we need them, but they are hired by DOE.
- Medical isotopes are 'a chicken and egg' situation. The medical community doesn't know there's a shortage because many of the isotopes are so new doctors are not aware of their existence. A lot of doctors don't realize the isotopes are out there. There is a need for medical isotopes, but it is veiled. It is very hard to quantify the need.
- One of the strongest arguments for restarting FFTF is that the nation will be avoiding many millions of dollars in invasive surgeries through early detection, treatment of disease and lives saved through use of radioactive isotopes. These are 'real medical savings' of health costs and for the national health budget. The few millions that are spent on medical isotopes should be ramped up to get the public behind DOE instead of batting it around so much.
- The focus should be on the making of the isotopes and not the means for processing.
- What is the true need for medical isotope production?
- Are Russia, Canada, Belgium and other foreign countries currently producing medical isotopes, willing to produce medical isotopes to support the demand?
- Are other countries searching for other alternatives to cancer treatment rather than using medical radioisotopes?
- What are the risks associated with transporting medical radioisotopes?
- What percentage of medical radioisotopes is the U.S. is currently importing from foreign countries?
- If the Canadian reactors are shut down, we'd be in a tough situation for acquiring needed isotopes.
- The isotopes used for diagnostic purposes are different from those used for therapeutic purposes. Most nuclear medicine is diagnostic. Only a small fraction of nuclear medicine is therapeutic.
- It is hard to comment on proposals without knowing the economics of isotope supply and demand. Radiopharmacists should be consulted on economics of supply of medical isotopes.
- Currently there is a backlog of requests for some radioactive seeds that causes waits of as long as three months for some procedures such as iodine 125.
- There is a need to consider the human dimension of backlogs. Without the isotopes, the tumors grow.

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## Response to Commentor No. 2019

the time. In accordance with CEQ implementing regulations (40 CFR 1502.14(e)), DOE has identified its preferred alternative for accomplishing the stated missions in Section 2.8 of Volume 1 of this Final NI PEIS and includes a discussion of DOE's reasons for selecting it.

**2019-20:** DOE analyzed a range of reasonable alternatives and options. In fact, including the No Action Alternative, 23 different combinations of irradiation and processing facility options were examined. This was done in order to determine the range of environmental impacts that may be encountered. Since combinations of sites and facilities other than those set forth in the PEIS may be selected (see Section 1.3 of Volume 1), the broad range of reasonable alternatives analyzed also bounds these other possible options.

**2019-21:** DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings. Section 1.2.1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

- Who made the decision that we can't use foreign isotopes, that we need our own domestic supply? **2019-54 (Cont'd)**
- If we want medical isotopes, do we have to accept one or more of these options? If we give up on domestic supply, then we would not need to restart or build anything. Would we need accelerators? If we build these new accelerators (and not restart FFTF) would that cut down net production of nuclear waste? **2019-55**
- How can we know if there really is a shortage of isotopes? **2019-56**
- Tri-Cities wants to be a regional medical hub. They want to move the patient to the isotope. **2019-57**
- Can the spallation neutron source at Oak Ridge be used for isotope production? **2019-57**
- It sounds like it's difficult to project need for isotopes. **2019-58**
- The Oregon Office of Energy said at the last FFTF hearing that DOE had to prove a need for specific isotopes. But the EIS does not do this. **2019-58**
- Can't we make medical isotopes at commercial power reactors? **2019-58**

### Questions/comments on environmental impact and Hanford cleanup

- DOE's poor track record in managing Hanford cleanup gives me no confidence in their ability to handle any new mission on site. **2019-59**
- I refuse to consider the FFTF, given as much time as I've spent on cleanup activities. But I've reached the point that I just don't have any faith whatsoever in DOE at this point in time to continue a stabilization and cleanup program on that site. The last thing I want to do is have them start a new production. It seems to me that the only leverage we have is to say: "if you want new production, don't turn it over to DOE at this point in time." I have become a real skeptic. **2019-59**
- It's not a valid argument that adding a small percentage to the existing amount of waste has a minimal impact. The proposed amount to be added from FFTF operation (one percent of Hanford's total waste) is one percent of a huge amount, given the total size of the waste at Hanford. **2019-60**
- Portland is more and more concerned about contamination in the Columbia River because Portland is using more and more of the Blue Lake aquifer for drinking water. There is a lot of concern about contamination in the Columbia River. **2019-61**
- Has anyone tested the soils in the river for radioactive contaminants? You cannot even think about adding more to the waste stream! **2019-61**
- At what point would they shut the river down? **2019-61**
- Why aren't the plumes characterized? Why don't we know what will be entering the river? **2019-61**

## Response to Commentor No. 2019

maintaining the capability to provide the plutonium-238 needed to support these missions. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, DOE recognizes that any purchase beyond what is currently available to the United States through the existing contract would likely require negotiation of a new contract and may require additional NEPA review.

**2019-22:** Section 1.2.1 of Volume 1 discusses the need for isotopes based on the Expert Panel and NERAC subcommittee recommendations. As discussed in the previous response and presented in Section 1.5 of Volume 1, the recommendations of these independent review groups were taken into consideration in developing the range of reasonable alternatives evaluated in the NI PEIS. NERAC is an independent Federal advisory committee appointed by the Secretary of Energy to advise DOE on civilian nuclear energy research program as noted in Section 1.2 of Volume 1.

The need for plutonium-238 to support NASA's mission is discussed in the previous response and further in Section 1.2.2 of Volume 1.

**2019-23:** As discussed throughout Section 4.3 of Volume 1, none of the proposed alternatives would add waste to the high-level waste tanks at Hanford.

Management of wastes that would be generated under implementation of Alternative 1, Restart FFTF, is discussed in Section 4.3 of Volume 1 (e.g., see Section 4.3.1.1.13). Section 4.3.1.1.13 was revised to clarify that, the Hanford waste management infrastructure is analyzed in this PEIS for the management of waste resulting from FFTF restart and operation. This analysis is consistent with policy and DOE Order 435.1, that DOE radioactive waste shall be treated, stored, and in the case of low-level waste, disposed of at the site where the waste is generated, if practical; or at another DOE facility. However, if DOE determines that use of the Hanford waste management infrastructure or



## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

- DOE works on one issue at a time. They don't want to look at cumulative impacts and don't want to find out that the problems are even bigger than we know now. As long as DOE convinces Congress that the waste is captured, no one in Washington will even say we have a problem at Hanford. The polluter always minimizes the harm and the impacts.
- It's the cleanup issue that makes us anxious. I'm concerned that DOE brings up FFTF to create a thought turmoil. It's a diversion. We don't want them to start up FFTF and take away from cleanup. Let's get to that discussion.
- Three years ago we said no FFTF for tritium and space. Now it's back again. It won't die.
- There is no mention of catastrophic events. What about earthquakes, fires, etc.?
- Under the environmental management of waste stream piece, they cite baseline and mention what waste might be produced in addition. There is a huge data gap for looking at the addition of new waste to existing waste (at Hanford, Oak Ridge, all sites.) The statement that 'we have considered it' isn't adequate reassurance. First of all the baseline data do not exist at any of the sites. It's incomplete. We know that from the Columbia River Comprehensive Impact Assessment.
- Nothing has been studied about the risk of transport of fuels, etc. This is a frightening prospect.
- Stack releases are not in the EIS.
- How many curies of tritium? Reactors put out a lot.
- What are the off gases?
- On-site vs. off-site production of targets. Wouldn't these missions add to already unsolved waste problems? The EIS makes the waste issue sound like no big thing. I disagree. It is not a small issue!
- The DOE assumes that cleanup is not a problem to be solved. Why is that not addressed in this EIS?
- There isn't any mention of how DOE will clean up wastes from operations of FFTF.
- The EIS says mixed low-level waste will be handled on site at a facility that is not yet constructed.
- We need to compare the waste from manufacturing plutonium 238 vs. decay during long-term storage. Will DOE process plutonium 238 on demand to avoid storage?
- Estimating health effects on humans seemed to be based on those people in the 50-mile radius over a 35-year period. A larger effect would be on workers. Literature shows employees in similar facilities have an increased incidence of cancers.
- I'm disappointed in the DOE. We fight to get money and they haven't used it well to clean up. This must be their number one mission, not new efforts. Keep FFTF at the ready for isotopes. I don't care about

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## Response to Commentor No. 2019

other DOE sites is not practical or cost effective, DOE may issue an exemption under DOE Order 435.1 for the use of non-DOE facilities (i.e., commercial facilities) to store, treat, and dispose of such waste generated from the restart and operation of FFTF. In addition, Section 4.3.3.1.13 and 4.4 3.1.13 also address the potential impacts associated with the waste generated from the target fabrication and processing in FMEF and how this waste would be managed at the site.

**2019-24:** The maintenance of certain technical capabilities represented in the employees at FFTF is not part of the DOE missions, which include the production of medical and industrial isotopes, the production of plutonium-238, and civilian nuclear energy research and development. However, DOE acknowledges that FFTF could provide a platform for training the next generation of nuclear scientists in the United States.

**2019-25:** 33. Approximately 242 people are employed in maintaining FFTF in the standby mode. If FFTF is restarted, 410 people will be needed to operate it.

34. There is no direct payment for the socioeconomic impacts on local governments. As work expands within a region, the money spent on accomplishing this work flows into the local economy. It is spent on additional jobs, goods, and services within the region. The increased taxes realized by local governments, from income taxes, sales taxes, etc., are expected to cover the cost of any socioeconomic impact.

**2019-26:** Management of wastes that would be generated under implementation of Alternative 1, Restart FFTF, is discussed in Section 4.3 of Volume 1 (e.g., see Section 4.3.1.1.13). Section 4.3.1.1.13 was revised to clarify that, the Hanford waste management infrastructure is analyzed in this PEIS for the management of waste resulting from FFTF restart and operation. This analysis is consistent with policy and DOE Order 435.1, that DOE radioactive waste shall be treated, stored, and in the case of low-level waste, disposed of at the site where the waste is generated, if practical; or at another DOE facility. However, if DOE determines that use of the Hanford waste management infrastructure or other DOE sites is not practical or cost effective, DOE may issue an exemption under DOE Order 435.1 for the use of non-DOE facilities (i.e., commercial facilities) to store, treat, and dispose of such waste generated from the restart and operation of FFTF. In addition, Section 4.3.3.1.13 and 4.4.3.1.13 also address the potential impacts associated with the waste generated from the target fabrication and processing in FMEF and how this waste would be managed at the site.

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

plutonium or nuclear research and development.

- Is there clear evidence of cleanup money being diverted to FFTF?
- The draft PEIS suggests there is no environmental impact.
- Can DOE clarify how the restart of FFTF would have an impact on Hanford cleanup funds? Whether FFTF is restarted or shutdown, it shouldn't have an impact on Hanford cleanup funding.
- How would restarting FFTF have an impact on the current waste problem at Hanford in terms of amount and handling?
- How does this affect Hanford cleanup? That has to be first! It's too expensive to keep FFTF in standby. That's money we need for cleanup.
- Spent fuel is an environmental impact. The EIS dismisses this! We can argue that proliferation creates an environmental hazard and therefore should be in the EIS.
- Where will the waste go? Yucca Mountain is already overbooked. That's the same lack of vision and blatant disregard that got us into the mess we're in now.
- The nuclear industry in this country has drained our pockets dry and left us with a legacy of waste that we have no way to deal with.
- Does this EIS address new earthquake standards?
- Could the sodium reactor blow up and damage the whole facility? Is this type of reactor more dangerous to operate than other types?
- Does the draft EIS actually talk about the environmental impacts? Does it include an analysis of impacts from waste that is not properly stored?
- If they restart FFTF, will they continue to do cleanup at Hanford?
- Would FFTF generate significant amounts of waste?
- Does DOE think the additional waste won't be significant?
- (The EIS) basically says, "Yes, there will be waste produced. But, just as (the government) claimed when we built these and produced waste during the war, we promise we'll find a place to put it. So don't worry about that." It's basically 50 years later, making the same claim: "don't worry."
- Is Hanford cleanup on schedule? How far behind are they? Is it all because of budget? How much does politics play in it? What are some examples of where the politics come in?

2019-68  
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## Response to Commentor No. 2019

If an exemption is approved to use commercial facilities, these facilities have not been identified at this time, therefore, it is premature at this time to determine whether or not wastes resulting from the operation of FFTF would be shipped across Oregon highways.

The NI PEIS addressed the environmental impacts due to the treatment storage, and disposal of the waste generated by the proposed actions for all alternatives and alternative options. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision.

**2019-27:** DOE notes the commentor's concerns. The purpose of the NI PEIS is not to "enhance our domestic infrastructure capability." Rather, the purpose of the NI PEIS is to evaluate the potential environmental impacts associated with the proposed expansion of DOE's nuclear infrastructure which would enable DOE to fulfill three missions: ensuring the availability of isotopes for medical, industrial, and research applications; meeting the nuclear material needs of other Federal agencies (i.e., NASA); and undertaking research and development activities related to development of nuclear power for civilian use.

DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings. Section 1.2.1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

- Isn't a large part of the cleanup problem DOE's failure to oversee its contractors?
- How does DOE prioritize FFTF restart in relation to cleanup?
- Won't income flow to the Tri-Cities be just as big for cleanup as it would be if they restarted FFTF?
- Have they begun moving any of FFTF's fuel into dry cask storage yet? Who is doing this? What success have they had?
- There needs to be an endowment to ensure cleanup and make sure that Hanford cleanup is not affected.

2019-78

### Questions/comments on FFTF's effect on agricultural communities

- There are no added negative impacts to the agricultural community with the restart of FFTF. We are confident with the existing emergency planning efforts.
- I came to these focus groups with a bias of supporting the shut down of FFTF. Nothing from the focus groups or the EIS has persuaded me that there is a viable mission for FFTF. It appears that DOE is still looking for a way or a credible case to restart FFTF. I am hesitant to support restart of FFTF when Morrow and Umatilla counties won't benefit financially from it but will likely experience some of the negative impacts.
- What is the potential drain of restarting FFTF to an already limited pool of skilled labor in the surrounding area?

2019-79

2019-80

### Questions/comments on groundwater issues

- Groundwater issues are complex, and the EIS needs to give more information about them.
- "When you get into the cones of depression and the tugging and pulling that occurs with groundwater, that should have been analyzed in the EIS. I don't know where the wells are and the depths in relations to the carbon tetrachloride plume and some of the other plumes. Any water that perks back into the ground will also affect the vadose zone before it affects groundwater."

2019-81

### Questions/comments on public/state influence on DOE decision

- It doesn't matter whether DOE listens (to public input). You need to comment to preserve your dignity.
- I don't trust that the public process makes any difference. But we have to make our position known. It's a political decision. But I can only hope this is the last stop before the law suit and the withdrawal of funding from DOE.

2019-82

## Response to Commentor No. 2019

Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, DOE recognizes that any purchase beyond what is currently available to the United States through the existing contract would likely require negotiation of a new contract and may require additional NEPA review.

The United States is and will continue to cooperate with foreign countries in medical research, space exploration, and nuclear energy research. For example, researchers from many foreign countries use DOE's high-flux research reactors for materials testing and experimentation. These facilities have the capability to maintain a high density of neutrons in a given test volume for materials testing; shorten the time needed for such testing; tailor the neutron flux to simulate the different reactor types and conditions; and instrument the core for close monitoring of the test conditions. Although the NI PEIS analyzes the expansion of U.S. civilian nuclear research and development, it is anticipated that DOE facilities would play a role in the continuing international research conducted in the United States.

**2019-28:** This NI PEIS presents a range of reasonable alternatives for consideration with respect to the decisions to be made for expansion of civilian nuclear energy research and development and isotope production missions in the United States. These actions are appropriately considered within the context of a programmatic EIS. While neither NEPA nor the CEQ implementing regulations provides a specific definition for what constitutes a "programmatic" EIS, CEQ's definition of a Major Federal Action (see 40 CFR 1508.18(b)(3))

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

- Has Secretary Richardson taken a position? Is this whole thing a pointless exercise?
- How will these focus group comments influence the final decision on whether to restart FFTF?
- When this relationship started with us and the Oregon Office of Energy, the office wanted our values, not our scientific input. This (level of scientific detail) has no redeeming value.

2019-82  
(Cont'd)

### Questions/comments on the plutonium 238 mission

- Do we want to depend on Russia as a source of supply?
- It's stupid to not buy it from Russia when they've got the supply.
- There's also the importance of skill and expertise in making plutonium. We will lose that intellectual capital if we stop making it. It's another factor.
- In absence of a compelling defense necessity, it's stupid for us to make it at a risk to our people when someone else will sell it to us.
- We need to weigh one against the other because the reactors don't have the capacity to produce all needed of both" (regarding weighing the production of plutonium 238 vs. medical isotopes).
- It makes sense for the U.S. Department of Energy to continue to purchase plutonium from Russia. This way DOE can focus on the production of isotopes for medical and industrial uses domestically.
- Assuming we can continue to purchase plutonium from Russia or elsewhere without problems, the U.S. Department of Energy should shut down FFTF. The \$40 million a year used to keep the facility in standby should be put into an account, and the money should be offered to private industry to subsidize medical isotope production.
- NASA says they don't need plutonium 238.
- I'm intrigued about purchasing plutonium from Russia. Can we be sure they know what they are doing in terms of safe processing, safe operation, etc.? It may not be as simple as just making the purchase. How do we know they aren't using children and putting workers in unsafe situations to make our plutonium?
- There are other sources of plutonium if we choose to use them. Materials are there for purchase. NASA may not even need them. So we're back to the cognitive dissonance DOE creates to keep us off base. They just want to keep a mission at Hanford. As far as I'm concerned, they must shut down FFTF. It's simple.
- Currently 50 percent of isotope production is being used. This statement assumes a resurgence of need for nuclear power. I don't believe it. We must scrap the Atomic Energy Act of 1954.

2019-83

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## Response to Commentor No. 2019

indicates, in part, that a group of actions undertaken to "implement a specific policy or plan" constitutes a program. Also, CEQ's guidelines for tiering EISs clearly state that broader EIS analyses are appropriate for "national program or policy statements" from which subsequent, more site-specific analyses may have to be prepared (40 CFR 1502.20 and 40 CFR 1508.28(a)). This NI PEIS has a broad, national-level scope associated with the selection of facilities and site locations for accomplishing multiple missions. However, the selection of facilities and site locations for accomplishing expanded civilian nuclear energy research and development and isotope production missions is not a political decision and is not biased. DOE evaluated each environmental resource area in a consistent, unbiased manner across all the alternatives to allow for a fair comparison among the various alternatives.

**2019-29:** DOE notes the commentor's concerns regarding what is evaluated in the NI PEIS. Consistent with its mandates under the Atomic Energy Act, DOE is proposing the nuclear infrastructure expansion for the purposes of addressing three primary needs:

- 1) to support the need for increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;
- 2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and for which the United States has no long-term, assured supply; and
- 3) to support civilian nuclear research and development needs in order to maintain the clean, safe, and reliable use of nuclear power as a viable component of the United States' energy portfolio. The NI PEIS evaluates the environmental impacts of a range of reasonable alternatives for accomplishing this mission. In addition to restarting the FFTF, the NI PEIS also evaluates alternatives that would either employ the use of existing facilities or rely on the construction of new facilities.

**2019-30:** DOE has made every effort to make this NI PEIS objective. This NI PEIS has been prepared in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR Parts 1500 through 1508 and 10 CFR Part 1021),

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

(To use FFTF) we must import mixed oxide fuel from Germany. That statement doesn't make sense given DOE's expressed concern about domestic supply.	2019-87
Is the only place we're currently purchasing plutonium 238 from Russia?	2019-88
Has the import of plutonium 238 from Russia been dismissed because of the transportation risk?	2019-89
Could a commercial reactor produce plutonium 238?	
Can plutonium 238 be used for anything else, like weapons?	
Was the validity of plutonium 238 for space missions discussed in the EIS or is it just a given that plutonium 238 supply will be needed for a 35-year period?	2019-90
The space mission need for plutonium 238 is not subject to the same kind of public scrutiny and public comment as this EIS. This is the same as our discussion of the tritium mission for FFTF. We couldn't question the need, only the impact. This is the same situation.	
Will NASA have the budget to do the missions for which they say they need plutonium 238?	2019-91
Does the no-action alternative address isotopes?	2019-92
Was there discussion about splitting the missions – plutonium 238 in one place and isotopes in another?	2019-93
Does the EIS say commercial light water reactors can't do the plutonium 238?	2019-94
I don't like the statement that solar panels are too inefficient. Germans are using them. They've been tested. There is pressure on NASA to go with plutonium 238 instead of photovoltaics. It's just too dangerous to have radioactive power sources in space. I'm concerned about accidental or purposeful distribution of plutonium in atmosphere upon reentry. That would result in total atmospheric dispersion of plutonium.	2019-95
How does the price compare between purchasing plutonium 238 as opposed to producing it?	2019-96
What is the current U.S. plutonium 238 stockpile and where is it located?	
It seems like an agreement to get hamburger from Jack-in-the-Box (in reference to buying plutonium 238 from Russia).	2019-97
We've heard about a letter saying NASA doesn't need the plutonium 238. Is that true?	
Is DOE saying there is enough plutonium from Russia if we carry through on the existing agreement?	
The way to go (on plutonium 238) is to buy the stuff from Russia.	
This idea of domestic supply is DOE's own fabrication and is not valid. DOE should adopt alternative five	2019-98

## Response to Commentor No. 2019

respectively. DOE evaluated each environmental resource area in a consistent, unbiased manner across all the alternatives to allow a fair comparison among the various alternatives. This was accomplished through review and evaluation of site-specific information on the environmental conditions prevailing at ORR, INEEL, and Hanford to include a comprehensive analysis of the associated environmental and health risks of each alternative.

- 2019-31:** A number of facilities, including smaller facilities, other than those selected for detailed analysis in the NI PEIS, were considered, but were dismissed from further consideration (see Section 2.6 of Volume 1). Among the reasons that some were dismissed was the fact that they lacked sufficient neutron production capacity, were fully dedicated to existing missions, were not capable of steady-state neutron production, had insufficient power to sustain adequate steady-state neutron production, were unable to produce a constant, reliable source of neutrons due to dependency on operating schedules of their primary missions, are under construction with capacity fully dedicated to other planned mission, or have been permanently shut down.
- 2019-32:** The environmental impacts of reasonable alternatives to fulfill the requirements of the missions were disclosed and evaluated in the NI PEIS. DOE made every effort to obtain, analyze, and disclose all required information to make a decision on expanding nuclear infrastructure. The costs and nuclear nonproliferation impacts of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report and Nuclear Infrastructure Nonproliferation Impact Assessment to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such ancillary documents need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed these documents to more than 730 interested parties on August 24 and September 8, 2000, respectively. Both reports were made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided summaries of the Cost Report and Nuclear Infrastructure Nonproliferation Impact Assessment in Appendixes P and Q, respectively, in the Final NI PEIS.

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

and proceed immediately with cleanup.

- If we buy from Russia, that stops the proliferation of the stuff.
- It's deceptive to not let us know the material is available from Russia.
- Did the NERAC study look only at U.S. needs, or did they also look at possibly getting isotopes from Canada?
- Does DOE sell plutonium 238 to NASA? Are there other opportunities to sell it for a profit and help pay for cleanup?
- Do we know anything about the plutonium 238 we're buying from Russia? Is it already produced, or would they have to make it?
- What does it cost to purchase the plutonium from Russia?
- Is it cheaper to have commercial power reactors produce plutonium 238, as opposed to building a new reactor or re-starting FFTF?

### Questions/comments on FFTF effect on Oregon State University

- Is there any way to quantify the effect of FFTF on OSU's program in terms of graduates employed and funding for research?
- The fate of FFTF has a pretty large impact on OSU. If it is restarted, there will be a demand for graduates of OSU's nuclear engineering and health physics programs as well as for the programs for training. OSU is the only educational research program in the West capable of supporting FFTF. Prior to shutdown, two-to-three graduates per year from OSU's program went to work at Hanford. About one quarter of the approximately 600 graduates of OSU's program work at Hanford. There is also funding for research that ended when FFTF was placed on standby. In this regard, FFTF restart has a very positive effect on OSU and the State of Oregon.

### Miscellaneous questions/comments

- FFTF is fatally flawed and totally foolish.
- I have not seen, heard, nor read anything to this point that shows me there is a viable mission or credible case for restarting FFTF.
- Alternative 5 is pretty interesting. Can FFTF burn plutonium?
- Is there a hidden agenda for weapons research and use of FFTF for classified future missions?

### 32 THE OREGON APPROACH

## Response to Commentor No. 2019

**2019-33:** For analysis purposes, the NI PEIS evaluates impacts from facility construction, modification, startup, and 35 years of operation, followed by decommissioning when applicable. The 35-year operating period is based upon the estimated length of time existing DOE irradiation facilities would continue operating if used for accomplishing the missions described in the NI PEIS. This timeframe also accommodates current projections that indicate the demand for radioisotopes and nuclear research and development requiring these expansion will extend for at least the next 20 years.

**2019-34:** The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed actions for all alternatives and alternative options. Waste treatment, storage, and disposal facilities for the wastes expected to be generated are identified in Chapter 4 under the Waste Management sections of the NI PEIS. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders. Mismanagement of wastes and its associated impacts are not discussed in the NI PEIS.

The NI PEIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada, would be the final disposal site for DOE's high level radioactive waste and spent nuclear fuel. As directed by the U.S. Congress through the Nuclear Waste Policy Act, as amended, Yucca Mountain is the only candidate site currently being characterized as a potential geologic repository for high-level radioactive waste and spent nuclear fuel. DOE has prepared a separate EIS, "Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada" (DOE/EIS-0250D, July 1999), which analyzes the environmental impacts from construction, operation and monitoring related transportation, and eventual closure of a potential geological repository.

**2019-35:** The environmental impacts of reasonable alternatives to fulfill the requirements of the missions were disclosed and evaluated in the NI PEIS. DOE made every effort to obtain, analyze, and disclose all

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

- FFTF would be available for any number of secret missions once it's restarted.
- The tourism slogan "Things look different here" shouldn't mean we glow! An accident or the fear of an accident can hurt tourism.
- When will FFTF be considered to be too old to operate?
- Was Argonne West at INEEL evaluated for the research missions?
- Has ATR been in cold standby?
- INEEL is also looking for a mission for its facilities.
- The conflict of interest/PNNL issue is not unclear. It's quite clear.
- Is NERAC appointed by DOE? Who are they? I'm immediately skeptical of a DOE-endorsed group.
- I read the National Research Council report on long-term management capabilities. It's chilling to read the degree to which they identify the institutional incapacity to deal with some of these issues. And then you read this (NERAC) which says: "Well, let's just keep kind of creating them." And meanwhile there is no mention at all of the institutional issues identified by NRC, which is at least independent, for dealing with this massive waste stream and the fruits of the technology. I find it very hard to put them in the same scale.
- "The only way, in my view, that this industry will make any leap to move forward is to start over again and build some credibility and build smaller. I see the stresses we have with nuclear power generation. I'm not in a good mood to be positive for this focus group and I apologize."
- "Is there any civilian nuclear energy research underway? There's been a 24-35 percent increase in the price of natural gas."
- "Is it technically feasible to build a 50 megawatt Triga type reactor?"
- "What is driving the numbers on the Latent Cancer Fatalities Table at S-46? Does one mission in particular drive the numbers? If not, why not? If the information that went into the table is available separately, why isn't it also presented separately in the Draft PEIS? The table should break out radiological impact by mission so that a cost-benefit analysis can be done. The table indicates that a new research reactor would not contribute any radiological risk."
- "Is there any analysis of cancer risk for deactivation?"
- "The *Draft PEIS* has a lot of analysis on non-traditional environmental (non-environmental) impacts."
- "Cost escalation in natural gas and other energy sources is making nuclear energy more cost-competitive. Is the underlying catalyst of the nuclear research the many relicensings of nuclear plants that are soon going to occur? 80-90 percent of current operating reactors will need relicensing. There's a big consolidation in the

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## Response to Commentor No. 2019

required information to make a decision on expanding nuclear infrastructure. The costs and nuclear nonproliferation impacts of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report and Nuclear Infrastructure Nonproliferation Impact Assessment to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such ancillary documents need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed these documents to more than 730 interested parties on August 24 and September 8, 2000, respectively. Both reports were made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided summaries of the Cost Report and Nuclear Infrastructure Nonproliferation Impact Assessment in Appendixes P and Q, respectively, in the Final NI PEIS.

**2019-36:** DOE notes the commentor's opinion. As stated in the Notice of Intent (64 FR 50064), one of the purposes of the proposed action is to determine the future role of FFTF.

**2019-37:** The costs and nuclear nonproliferation impacts of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report and Nuclear Infrastructure Nonproliferation Impact Assessment to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such ancillary documents need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed these documents to more than 730 interested parties on August 24 and September 8, 2000, respectively. Both reports were made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided summaries of the Cost Report and Nuclear Infrastructure Nonproliferation Impact Assessment in Appendixes P and Q, respectively, in the Final NI PEIS.

**2019-38:** It is assumed that the commentor is referencing the use of the proposed Canister Storage Building that would be used for the interim storage of immobilized high-level waste canisters produced by the River Protection Project-Waste Treatment Plant. This facility would not be

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

commercial nuclear energy industry occurring. In a deregulated energy market, nuclear operators are doing quite well because their costs per watt are so low."

- "The fact that the plant has remained operationally ready over 25 years says a lot about the operational capabilities of management."
- "If a 50 megawatt TRIGA is not feasible, can they use multiple, smaller reactors?"
- "Where does DOE want to locate the new reactors?"
- "In the combinations of options being considered, it looks like Hanford can't have a new accelerator unless FFTF is restarted."
- "Restarting FFTF is completely antithetical to our values."
- "Who is the expert panel? The NERAC committee should have been named in the EIS."
- "What about the bills, the MOU, the Oregon Legislature position to not make more waste, the City of Portland opposition. What else must we do to say we are unalterably and adamantly opposed to restart of FFTF?"
- "Hanford and Tri-Cities see financial gain in restarting FFTF."
- "We want the Oregon Office of Energy to pass this message on to DOE: 'We are unanimously opposed to the restart of FFTF.'"
- "What is this need for research and development? Is it being driven by the nuclear industry? This is the wrong direction to go. This is a violation of our values."
- "Are there defense research missions that can lead to new bomb production? If there are defense projects that can be pursued with FFTF, how could they not do an EIS?"
- "Could they sneak in a tritium mission and keep it classified?"
- "I've heard concerns that some of the FFTF waste would go into Hanford's underground tanks."
- "I think some of the missions should not be done anywhere."
- "Not in my backyard. Over my dead body!"
- "We've shown up in huge numbers and told them what we want, and it hasn't made any difference."
- "This is a snow job!"
- "I'm concerned about operation safety. If FFTF goes another 35 years it will be 55+ years old. No

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## Response to Commentor No. 2019

used as part of the proposed action and alternatives considered including activities under Alternative 1, Restart FFTF. Management of wastes that would be generated under implementation of Alternative 1, Restart FFTF, is discussed in Section 4.3 of Volume 1 (e.g., see Section 4.3.1.1.13).

**2019-39:** Restarting FFTF could have a positive socioeconomic impact on the Hanford area. Socioeconomic impacts associated with Alternative 1, Restarting FFTF, are discussed in Section 4.3 of the NI PEIS.

**2019-40:** DOE notes the commentor's concern over the costs of maintaining DOE facilities in standby. Cost concerns related to this, as well as to all the alternatives in the PEIS will be considered in reaching a decision on managing the DOE nuclear infrastructure. DOE prepared a separate Cost Report and Nuclear Nonproliferation Impact Assessment to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such ancillary documents need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed these documents to more than 730 interested parties on August 24 and September 8, 2000, respectively. Both reports were made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided summaries of the Cost Report and Nuclear Nonproliferation Impact Assessment in Appendixes P and Q, respectively, in the Final NI PEIS.

Reaching a decision will help DOE make best use of its nuclear facilities, and minimize the time any must remain in a standby condition. Even after a decision is made, however, DOE's budget requests to use its facilities must be approved by the Congress.

**2019-41:** The uncertainty of cost projections is well understood and is included in a separate Cost Report analyzing each of the PEIS alternatives. Future adjustments in project scope or schedule, or future policy changes, may change such projections beyond any uncertainties. Even so, the analyses in the Cost Report allow a comparative evaluation by the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS.

Even after a decision is made, however, DOE's budget requests must be approved each year by the Congress, which



## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix E

reactor in history has operated safely for that length of time."

- "I don't trust that FFTF can operate another 35 years. Do previous safety analyses support another 35 years?"
- "What do the people in the Tri-Cities feel about this?"
- "Why are these missions being proposed? Is this a mandate from Congress?"
- "Are other linear accelerators in the United States being shut down?"
- "Would you outline the decision process which DOE will be following?"
- "Wasn't NERAC's final report very negative on the use of FFTF?"
- "I don't understand what you're talking about. It's way too technical. I want to get to my concerns. What about the cleanup agreement? What about the Columbia? What about the groundwater?"

### Questions/comments about Oregon Office of Energy input on FFTF issues

- "Is it possible for the Oregon Office of Energy to take a position on whether to restart the Fast Flux Test Facility at this time without a cost analysis document and incomplete information on many of the proposed alternatives?"
- "There is a perception that the Oregon Office of Energy is anti-nuclear, even though it may not actually be so predisposed... There is a perception that staff are told what to think about the issues."

### Questions/comments on the Oregon Office of Energy/DOE public input process

- "Focus groups would be a lot more informative if the summary had been available for the first meeting and everyone had read it."
- "I want to compliment the Oregon Office of Energy on its written and mailed info. It was very well put together."
- "The Oregon Office of Energy did a great job on the last EIS. I expect this will be a great job as well."
- "I would like a description of how this information will be used. I'm concerned about the format of any report of the process. Process is good for developing policy positions for the agency and governor. I don't like it when DOE uses head counts and votes: They tend to pick and choose the parts they want."
- "This is a good public process. I commend (the Oregon Office of Energy) for going through this exercise."

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## Response to Commentor No. 2019

determines how funds are allocated. DOE spends monies consistent with Congressional direction.

- 2019-42:** The Final PEIS does not address the dismantlement of the FFTF. If the Secretary of Energy decides in the Record of Decision to deactivate FFTF, DOE would request funding to implement this decision. In this budget request, DOE would indicate under which office FFTF deactivation would be funded and managed. Congress would determine where the funding would be appropriated and managed, either approving, denying or modifying DOE's request. The budget decisions are thereby made binding.
- 2019-43:** DOE notes the commentor's view.
- 2019-44:** The No Action Alternative, which is required by Council on Environmental Quality regulations (40 CFR 1502.14 (d)), requires DOE to consider the continuation of its present course of action, which includes maintaining FFTF in standby. The No Action Alternative provides an alternative to which the action alternatives may be compared. It should be noted that permanent deactivation of FFTF is a part of all other alternatives analyzed in the NI PEIS, except Alternative 1, Restart FFTF.
- 2019-45:** This NI PEIS has been prepared in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR Parts 1500 through 1508 and 10 CFR Part 1021), respectively. DOE evaluated each environmental resource area in a consistent, unbiased manner across all the alternatives to allow a fair comparison among the various alternatives. No final decisions have been made with regard to the facilities and locations evaluated to fulfill the requirements of the stated missions, which include the production of medical and industrial isotopes, the production of plutonium-238 for NASA space missions, and nuclear research and development. However, in accordance with Council on Environmental Quality regulations (40 CFR 1502.14(e)), DOE has identified its preferred alternative in Volume 1, Section 2.8 of the Final NI PEIS and includes a discussion of DOE's reasons for selecting it. DOE's Record of Decision for the NI PEIS will be based on a number of factors including environmental impacts, public input, costs, nonproliferation impacts, schedules, technical assurance, and other policy and programmatic objectives.

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix F

#### FOCUS GROUP WRITTEN COMMENTS

##### Focus Group Written Comments From Opinion Forms

- "No opinion on the issue." 2019-142
- "I lean toward the last alternative." 2019-143
- "PEIS needs to deal with issues at already contaminated groundwater under Hanford and how that might limit uses for FFTF operation or be affected by FFTF operation." 2019-144
- "There was an assumption that the missions were valid. Those assumptions were not justified, and seem to not be solid. Costs are important, but were not provided. Other seeming important issues were not well covered or not covered at all such as: processing waste disposal, groundwater impact, transportation safety accommodation, etc." 2019-145
- "I believe the other two facilities, at least together, can accomplish what can be accomplished at Hanford. The above questions do not provide an opportunity to do this." 2019-146
- "Assuming the needs are valid, and the need to do it in the USA is correct, then restarting FFTF is the best alternative. It is important to keep FFTF separate from cleanup or military activities." 2019-147
- "I have no faith in DOE's capability in stabilizing and clean up of legacy wastes. Until better progress is made for these wastes I cannot support any further production at Hanford." 2019-148
- "More info should be provided in the EIS to answer many questions we/I have. The FFTF could be shut down if other facilities can produce the Pu-238 and isotopes. Need costs if DOE can't get what is needed FFTF could restarted, but processes to develop fuel, extract Pu-238, etc need to be described accurately and adequately." 2019-149
- "The Department of Defense and other Federal Agencies have used Hanford facilities without paying for waste management and cleanup. Until Congress guarantees a budget that includes decommissioning and cleanup costs, I cannot support a restart option of FFTF." 2019-150
- "Shutdown now – costs will only continue to rise. I believe that other facilities can meet the proposed mission. Put the operating costs and/or maintenance costs into a fund to underwrite the production or purchase of product as needed." 2019-151
- "I suggest you provide a summary table of the costs, risks, options, and "others" factors for each mission. The state position should be tied to your original position or what the PEIS and the decision should cover. Most notably, diversion costs from clean up and production of new waste." 2019-152
- "Purchase Pu-238 from Russia. Restart FFTF for medical isotopes/industrial. Otherwise, decommission" 2019-152

## Response to Commentor No. 2019

CEQ regulations for implementing NEPA require that EISs be written in plain language so that they can be more easily understood and that the EIS be accompanied by a summary of the EIS's content (40 CFR 1502.8 and 1502.12, respectively). DOE strives to produce NEPA documentation and related materials that are easily understood by the public by avoiding the use of jargon, defining technical terms and concepts through the use of common comparisons, avoiding the use of acronyms to the extent possible, and provision of a summary that is clear and concise, among other means. In order to improve the public's comprehension and understanding of the PEIS, this Final NI PEIS reflects revisions that have been made to eliminate some redundant and extraneous information while some sections have been reorganized to improve readability. For example, the summary of environmental impacts (Volume 1, Section 2.7) has been reorganized by environmental resource area so that impacts in each area (e.g., waste management) can be quickly gauged across all alternatives.

**2019-46:** See response to comments 2019-11 and 2019-20.

**2019-47:** DOE notes the commentor's concerns about the need for radioactive isotopes in medical procedures and the wastes produced in their production. Radioisotopes are used for both therapy and diagnosis. In ongoing clinical testing, therapeutic isotopes have proven effective in treating cancer and other illnesses by cell-directed localized radiation therapy (i.e., deploying antibodies or carriers of radioisotopes to seek and destroy invasive cancer cells). This directed therapy can minimize adverse side effects (e.g., healthy tissue damage, nausea, hair loss), making it an effective, attractive alternative to traditional chemotherapy or radiation treatments. In addition to therapy for cancer and other illnesses, radioisotopes are also used for diagnostic purposes, such as imaging internal organs. Unlike conventional radiology, imaging with radioisotopes reveals organ function and structure, which provides additional data for a more accurate diagnosis, and assists in the early detection of abnormalities. The generation of wastes from the production of medical isotopes, which are small in comparison to the candidate sites' current generation rates, are discussed for each alternative in Chapter 4 of the NI PEIS. The additional waste generated would only have a small impact on the management of wastes at the candidate sites.

DOE notes the difficulty in reliably predicting isotopic needs for future uses in research and medicine. DOE has sought independent analysis of

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix F

#### FFTF

- "Comment on Question 5 – But what's the cost of not having the medical isotopes available or not enough or too expensive due to lack of availability?" 2019-153
- "Shutdown FFTF and put the \$40 million/yr savings from holding it in standby into a fund that incent [sic] the development of needed medical/industrial isotopes. NIH could do regular projections of need, RFPs could be issued and whoever can produce what's needed would get up to \$40 million/yr. The Pu-238 can come from Russian (our space partner) and help their economy while meeting all our needs." 2019-154
- "This process does not seem effective. This is complex stuff which requires a greater level of knowledge to contribute effectively. We should read the summary (75 pages) prior to the first meeting. I'm not sure what you were trying to accomplish." 2019-155
- "EIS needs to address disposition of transuranic waste from target processing. This could have a significant environmental impact. Need cost study to determine if FFTF is the best alternative." 2019-156
- "EIS should demonstrate need for the proposed mission. DOE should either restart or permanently shutdown, but should not continue spending 35–45 million indefinitely for hot standby. DOE should clearly state the decision criteria uses to make a final decision. FFTF was originally designed as a research reactor – the EIS should include detail on what kind a [sic] research would be done. A good summary should be widely distributed well in advance of the comment period. Two days with a 4-page summary is not enough." 2019-157
- "I am confident that an environmental and economic comparison of using as existing facility (which otherwise requires \$35M/yr to maintain with no output) with building new facilities will definitely prove highly more favorable and wise for restarting FFTF." 2019-158
- "I feel other alternatives need to be considered i.e. can and should availability of material from outside the U.S. be used? What is the downside to doing this? I am still concerned about clean up at Hanford and the impact of restarting FFTF in practical and political terms." 2019-159
- "I ultimately believe that the good outweighs the bad." 2019-160
- "I would not be opposed to restarting the FFTF provided cleanup (current and future) is not endangered. The need for medical isotopes appears clear to me. I believe the U.S. should not be dependent on foreign countries for deep space missions. I very much appreciate this opportunity for input and information." 2019-161
- "The idea of using existing nuclear facilities for an expanded mission is a very good idea. Analysis of the PEIS is needed to establish if FFTF is the best place to do this. Some issues are problematic, such as generating nuclear waste at FFTF v. buying the materials elsewhere with no U.S. waste." 2019-162
- "I believe we need assurances to the public that there will be a strong and well funded Columbia River water monitoring program for the 35 year period. We need assurances that management turnovers at FFTF are in the best interests of the public and the environment. A well thought out cost-benefit analysis is needed." 2019-163
- "The idea of using existing nuclear facilities for an expanded mission is a very good idea. Analysis of the PEIS is needed to establish if FFTF is the best place to do this. Some issues are problematic, such as generating nuclear waste at FFTF v. buying the materials elsewhere with no U.S. waste." 2019-164
- "I believe we need assurances to the public that there will be a strong and well funded Columbia River water monitoring program for the 35 year period. We need assurances that management turnovers at FFTF are in the best interests of the public and the environment. A well thought out cost-benefit analysis is needed." 2019-165
- "I believe we need assurances to the public that there will be a strong and well funded Columbia River water monitoring program for the 35 year period. We need assurances that management turnovers at FFTF are in the best interests of the public and the environment. A well thought out cost-benefit analysis is needed." 2019-166

#### 42 THE OREGON APPROACH

## Response to Commentor No. 2019

trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings. Section 1.2.1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

- 2019-48:** DOE radiological control requirements (for both workers and the public) are designed with the intent to meet the legal requirements for the safe operation of DOE facilities contained within 10 CFR 835. In order to meet these requirements, DOE has established the DOE Radiological Health and Safety Policy (DOE P 441.1, April 26 1996) and developed a DOE Standard: Radiological Control (DOE-STD-1098-99, July 1999). Worker safety (radiological protection) is a key element of the both the Policy and the Standard. The policy states in part that Department of Energy facilities must "conduct radiological operations in a manner that controls the spread of radioactive materials and reduces exposure to the workforce and the general public and that utilizes a process that seeks exposure levels as low as reasonably achievable." Each DOE site, including Hanford, is required to implement a radiological control program with the intent to meet this policy goal, using as guidance the radiological control standard. The health and safety impacts on workers associated with both medical isotope production and plutonium production are presented in Appendix H of the NI PEIS. The worker dose associated with the irradiation of target materials is independent of the type of target material being irradiated. The worker dose is a function of the type of reactor, operating procedures and radiological control measures in use at the facility. The average worker dose associated with processing of the irradiated targets

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix F

in terms which could be easily understood by typical people on the street. The medical needs present a unique human benefit perspective which bears enhancement and support in the political and academic communities."

- "I think the main use should be production of medical and research isotopes rather than the "space battery" production. I feel there is strong need at present for these items."
- "I didn't get the summary of the PEIS prior to this meeting to review. I think the missions (especially medical isotope production) should be evaluated as separate entities. I don't want the facility kept on line, supposedly to produce medical isotopes, then have it used primarily as a research facility by a foreign country."
- "Without having seen the cost analysis, it appears that the cost of using FFTF for Pu-238 and medical missions will be significantly more expensive. However, it comes down to being prepared for future difficulties with supply and being able to respond."
- "(Comments) Will be submitted directly to USDOE."
- "I feel that the first two questions on this questionnaire are significantly biased toward the negative [disagree, strongly disagree]."
- "#3 Don't know what exploring they've already done. These questions obviously try to slant my response (#1-5)"
- "These questions are severely biased and lead to inconsequential results and answers."
- "Buying Pu-238 would not prevent any negative environmental impacts from occurring in the world."
- "Since we need it, it would be better for us to have the control of the process."
- "I have a serious concern that the numbers will be tallied and USDOE will not understand the overwhelming opposition to the restart of FFTF. There also needs to be mentioned the prior commitment made to shutting down FFTF by Admiral Watkins and Sec. O'Leary and that it was USDOE who placed FFTF in the TPA for the final termination!"
- "The emphasis at Hanford should focus on clean-up and not future production. Without the cost studies to demonstrate cost effectiveness the PEIS is ludicrous."
- "1) Any fuels purchased from foreign countries should be dependent on their adequate systems of disposal in accordance with U.S. standards. 2) NASA's needs should be reviewed on the basis of the percentage of missions funded by the Congress in the past. 3) Risk of transportation of radioactive materials should be ascertained using mathematical models and worst case scenarios. 4) DOE should research alternative forms of energy with the same vigor as they have pursued nuclear fuel research and development."
- "It's obvious the USDOE doesn't want public input on this scheduling the public comments the last week of

2019-166  
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2019-167

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2019-175

2019-176

2019-177

2019-178

## Response to Commentor No. 2019

are very similar for both medical isotopes and the irradiated neptunium targets. Based on the assessment of worker health impacts for the range of reasonable alternatives and options that make use of Hanford facilities, the most likely impact of the use of these facilities is no increase in cancer fatalities among the facility workers. For example in Alternative 1 option 3, all of the activities (target irradiation and processing) occur at Hanford facilities. As shown in Section 4.3.3.1.9, the expected consequences are less than one additional fatal cancer among the workforce; that is, no additional fatal cancers are expected.

The estimates of the potential human health impacts associated with the range of reasonable alternatives proposed for the production of isotopes for medical uses, research and development, and as heat sources for radioisotope power systems also shows that the impacts from the production of medical isotopes and from the production of radionuclide heat sources are very similar. Sections 4.3 through 4.6 of Volume 1 provide the results of the evaluation of potential health impacts that would be expected to result from implementation of each of the alternatives including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with each alternative would be small.

**2019-49:** DOE has sought independent analysis of trends in the use of medical radioisotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert committees. In 1998, an Expert Panel convened to forecast future demand for medical isotopes estimated that the expected growth rate of medical isotope use during the next 20 years will range between 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by DOE's Nuclear Energy Research Advisory Committee (NERAC), established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. The growth projections were also adopted by DOE as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual growth of medical isotope use has tracked at levels consistent with the Expert Panel findings.

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix F

summer vacation and by not providing the public with necessary information in advance, i.e. cost study, nonproliferation study, and preferred alternative when it is obvious they have one already.”

2019-178  
(Cont'd)

- “I would like to thank the Oregon Office of Energy for their effort to conduct these focus group meetings. They have help to further educate me as well as comment on the FFTF issue.”

- “I believe that main focus of DOE at Hanford should be CLEAN UP to original state before nuclear missions were started at Hanford Site. I also would highly recommend that no further production missions are pursued and rather than production a new push toward radiation neutralization research should be pursued and funding through Congress be found. This way the biggest reason - self-perpetuation of DOE and saving jobs will be funded and secured.”

2019-179

- “The missions stated do not support restarting the FFTF. What other missions are being considered? What proposals have DOD made in relation to the FFTF restart?”

2019-180

- “This is the latest smoke and mirror show from the DOE. The FFTF should be shut down ASAP - you told us you would shut it down - there is overwhelming public support of shutting it down and should live up to your word - shut it down.”

2019-181

- “Shut down the FFTF. Concentrate solely on clean up. Do not import any more radioactive materials to this site.”

2019-182

- “There doesn’t seem to be any question that the condition of Hanford Facility will not improve (environmentally) by re-starting the FFTF. Knowing that, and speaking simply as a concerned Oregonian, I believe that the only right thing to do is to shut down FFTF and continue clean up.”

2019-183

- “You have not addressed the effect that non-cleanup would have to the environment. You must consider the river and do long term effects of this nuclear waste. Hardly any emphasis has been given to this topic. Other facilities with the U.S. can be adjusted to “cover” any needs of the FFTF. You can buy plutonium from Canada/Russia, etc.”

2019-184

2019-185

- “It appears that the PEIS report has ignorantly and disapprovingly ignored options such as purchasing [Pu]238 from Russian and using commercial reactors to make the plutonium and/or isotopes. Also, by dismissing the nuclear waste’s threat as minimal they are ignoring a huge known fact and insulting many people’s intelligence. This is disappointing considering that a several hundred page scientific report could ignore such blaring facts.”

2019-186

2019-187

- “PEIS[sic] cannot be credible unless it deals straight up with permanent waste disposal. Likewise unless it is willing to look at option involving international sources. More comments to follow.”

2019-188

- “The over 25 individuals that I have daily contact with from varying social-economic backgrounds have basically voiced the same opinion about this site. Why would you even have to ask if there is a choice, clean it up, close it down.”

2019-189

## Response to Commentor No. 2019

DOE notes the commentor’s concern that producing research isotopes at FFTF would be “overkill.” It would not be cost effective to restart FFTF for the singular purpose of producing small quantities of various research isotopes. However, sustained operation of FFTF for the production of larger quantities of both research and commercial isotopes would be viable if operated in concert with producing plutonium-238 and conducting nuclear energy research and development for civilian applications. As the NERAC report states: “In limited instances, the DOE possesses unique resources, e.g., the high flux of fast neutrons and large irradiation volume in FFTF, that could be utilized for the production of some radioisotopes, but is best suited for commercial interests who might consider its use for isotope production.” In recognition of these constraints on its operational feasibility, the NI PEIS only evaluates the use of FFTF when coupled with the other stated missions. While some existing reactors may possess the potential capability or capacity to support research isotope production, as suggested in the NERAC report, it is unlikely that reliable, increased production of these isotopes to support projected needs could be accomplished without disturbing the existing missions of these facilities.

The Final Report issued in April 2000 by the NERAC Subcommittee for Isotope Research and Production Planning identifies the need for expanded production of both medical and industrial isotopes. The proposed action similarly includes expanded production of industrial isotopes, as discussed in Section 1.2 of the NI PEIS. Industrial isotopes are needed to support both academic research, and industrial research and development applications. These applications fall into the three broad categories of nucleonic instrumentation, irradiation and radiation processing, and technologies that use radioactive tracers.

The Expert Panel and NERAC reports were each used in developing the NI PEIS, and made available to the public at the NI PEIS public information centers and on the Internet at [www.nuclear.gov](http://www.nuclear.gov).

- 2019-50: As presently structured, the alternatives do not provide for the production of medical/industrial isotopes and plutonium-238 in two different reactors; however, as stated in Section 1.3 of Volume 1, DOE could choose to combine components of several alternatives in selecting the most appropriate strategy. Thus, it is possible that such an alternative could be developed. It should be noted that at the present time existing research reactors do make medical/research isotopes;

## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy

### Appendix F

- "In the overall scheme of things I don't think running it would make a difference, i.e. it's going to take "billions of years" however a little helps I guess – so let someone else do it!! How does the cost i.e. buy from Russia, buy from Canada affect our balance of payments?" **2019-190**
- "The information available generally tends to support the interests of those providing it. Seems the biggest concern should be cleanup. I can't understand this from only one perspective. Couldn't they build some sort of retaining wall between and under the 177 tanks at Hanford and the Columbia River? (very costly – sure)." **2019-191**
- "Interesting that plutonium 238 is so lucrative – just happens to be the fuel for so many technologically unobtainable (at least to the comprehension of many) "implements." **2019-192**
- "It'll be interesting to see how the public opinion "falls out" – considering how one sided and uneducated (to the issues) we as a whole are." **2019-193**
- "Actually I do need more data on this and study this subject on my own." **2019-194**
- "Discussion of Hanford tank pool cleanup – irrelevant; disposal of reopened FFTF waste is crucial. Is dry cask storage possible? Successful? – e.g., Trojan." **2019-195**
- "PEIS is inadequate because 1) it doesn't include cost issues, which are integral to the analysis 2) it doesn't include the NN issues - undermining the nonproliferation regime poses and environmental hazard 3) it doesn't include environmental impact of potential defense-related missions that could be done on FFTF once it's restarted 4) doesn't look at all possible catastrophic failures over 35 years of operation (these are also dependent on operational funding levels, staffing, training, and safety budgets over the 35 years period)." **2019-196**
- "Not in my backyard. Over my dead body." **2019-197**
- "I object to the rip-off of American taxpayers to subsidize the nuclear industry - an effort to create missions to keep this toxic program going. DOE so readily spends millions that create toxic wastes and accepts little responsibility for spending the millions needed to clean up the mess that has been made. We demand the right to speak out - direct the use of our money as we see fit." **2019-198**
- "(You have them in your computer.) To the US DOE: The whole process for considering the restart of the FFTF over the past several years has been duplicitous to say the least. Budgets have been shuffled to deceive us; the PEIS is full of vague and misleading statements, a skirting around the real issues and deep concerns of the larger public. The explanation of environmental impacts and risks is a sham: you will move ahead without looking far out into the future, merely to create your own empires and pad your pockets. You do not have the best interest of the real public in mind. It is obvious." **2019-199**
- "We do not wish to repeat the lack of vision, mismanagement, the production of waste, the disregard for the earth and future generations. No more waste production at Hanford that is not directly involved in effective cleanup." **2019-200**
- "Hanford cleanup should carry primary priority. Many of the missions (question 4) I see no reason for." **2019-201**

## Response to Commentor No. 2019

however, these facilities would be fully used within a 5- to 10-year period if no enhancements to the existing nuclear facility infrastructure are implemented.

- 2019-51:** DOE notes the difficulty in reliably predicting isotopic needs for future uses in research and medicine. Section 1.2.1 of Volume 1 discusses the need for isotopes based on the Expert Panel and NERAC subcommittee recommendations. As further discussed in Section 1.5 of Volume 1, the recommendations of these independent review groups were taken into consideration in developing the range of reasonable alternatives evaluated in the NI PEIS. NERAC is an independent Federal advisory committee appointed by the Secretary of Energy to advise DOE on civilian nuclear energy research program.

DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings. Section 1.2.1 of Volume 1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

For nearly 50 years, DOE's use of its unique technologies and capabilities to develop isotopes for civilian purposes has enabled the widespread application of medical isotopes seen today. While its market share is a small fraction of total world radioisotope production, DOE remains the key provider for a large number of radioisotopes that are used in relatively small quantities by individual researchers at universities and hospitals. Because their application is initially experimental, these isotopes are not generally purchased in large-enough quantities to make their production financially attractive to private industry.

## Commentor No. 2019: Mary Lou Blazek (Cont'd)

### Oregon Office of Energy

#### Appendix F

- “The lack of a cost analysis and limiting the scope of the alternative hinders the ability to make a conclusive decision. The social-economic impacts to communities outside the immediate Tri-Cities, WA area are very real but not addressed. Lack of management by the DOE in past issues increases the skepticism as to their ability to follow through. By not addressing fabrication and processing scenarios it can't be determined as to the level of exposure to the general public.”
- “Future alternatives should be made for such needs. Alternatives that will not produce future long term hazardous cleanups. A hazardous material should not be produce if clean-up, or proper storage cannot be addressed. The negative impacts of the current hazardous wastes are undetermined and will impact all of us/or my lifetime and others.”

2019-202

2019-203

2019-204

2019-205

## Response to Commentor No. 2019

The United States currently purchases approximately 90 percent of its medical isotopes from foreign producers, most notably Canada. However, supplies of many research isotopes are not readily available from existing domestic or foreign sources, causing a number of medical research programs to be terminated, deferred, or seriously delayed. Under the NI PEIS proposed action and consistent with its mandates under the Atomic Energy Act, DOE would enhance its existing nuclear facility infrastructure to, among other things, more effectively support production of radioisotopes for medical applications and research.

Currently, approximately 50 percent of DOE's isotope production capability is being used. Much of the remaining isotope production capability is dispersed throughout the DOE complex. This capability supports secondary missions, but cannot be effectively used due to the operating constraints associated with the facilities' primary missions (basic energy sciences or defense). DOE is currently meeting most of its short-term requirements. However, in the long-term (next 5 to 10 years) there will be a shortfall in available DOE capacity to meet demand. Should the isotope demand grow consistent with the Expert Panel Report, as it has recently, or if DOE's market share increases, there will be a need for expanded isotope production capacity in the short term (less than 5 years). DOE has not received any comments or input from the National Institutes of Health on the NI PEIS.

**2019-52:** The commentor's interests in foreign medical research and alternative cancer treatments are noted, although these topics are outside of the scope of the NI PEIS. As discussed in Section 1.2.1 of Volume 1, one of the DOE's missions is to insure a reliable supply of medical isotopes for clinical applications and medical research.

**2019-53:** Risks associated with transporting medical radioisotopes are included in the analysis described in Chapter 4 of Volume 1 and Section J.5.3 of Appendix J. The analysis conservatively assumes that all medical, industrial and research and development isotopes are shipped via air to an east coast distribution facility. The maximum transportation impacts for these isotopes are given in Table J-7. The incident-free risk to the public is 0.0037 latent cancer fatalities and the accident risk is 0.53 latent cancer fatalities. Transportation risks are summarized in Section 2.7.1.6 of Volume 1.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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Appendix F

**Other written comments**

***Response to Commentor No. 2019***

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**2019-54:** Diagnostic radioisotopes are used for imaging internal organs. Unlike conventional radiology, imaging with radioisotopes reveals organ function and structure, which provides additional data for a more accurate diagnosis, and assists in the early detection of abnormalities. In ongoing clinical testing, therapeutic isotopes have proven effective in treating cancer and other illnesses by cell-directed localized radiation therapy (i.e., deploying antibodies or carriers of radioisotopes to see and destroy invasive cancer cells). This directed therapy can minimize adverse side effects (e.g., healthy tissue damage, nausea, hair loss), making it an effective, attractive alternative to traditional chemotherapy or radiation treatments.

The United States currently purchases approximately 90 percent of its medical radioisotopes from foreign producers, most notably Canada. However, supplies of many research isotopes are not readily available from existing domestic or foreign sources, causing a number of medical research programs to be terminated, deferred, or seriously delayed. Under the NI PEIS proposed action and consistent with its mandates under the Atomic Energy Act, DOE would enhance its existing nuclear facility infrastructure to, among other things, more effectively support production of radioisotopes for medical applications and research.

For nearly 50 years, DOE's use of its unique technologies and capabilities to develop isotopes for civilian purposes has enabled the widespread application of medical isotopes seen today. While its market share is a small fraction of total world radioisotope production, DOE remains the key provider for a large number of radioisotopes that are used in relatively small quantities by individual researchers at universities and hospitals. Because their application is initially experimental, these isotopes are not generally purchased in large-enough quantities to make their production financially attractive to private industry.

DOE has sought independent analysis of trends in the use of medical radioisotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it has established two expert committees. The first, a thirteen-member Expert Panel convened in 1998 to forecast future demand for medical isotopes, included academicians from leading medical universities and schools of public health, and professional affiliations ranging from the National Cancer Institute to manufacturers of radiopharmaceuticals. The second



## Commentor No. 2019: Mary Lou Blazek (Cont'd) Oregon Office of Energy



Office of Planning & Development Review • Transportation

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August 24, 1999

For More Information Contact:  
Marc Zolton - 823-4682

### Commissioner Charlie Hales' statement on Hanford Cleanup

It is time for Portland citizens to recognize the serious threat to their health and welfare posed by the Hanford nuclear reservation. As the largest city on the Columbia River, we can no longer ignore this significant issue of local concern.

I call upon the federal government to meet its obligation to clean up the highly radioactive soup that now pollutes the Hanford site and threatens groundwater and the Columbia River. A serious commitment on the part of the U.S. Department of Energy to fully characterize and clean up the site to the highest regulatory standards is long overdue.

In addition, any serious consideration of a restart of any of Hanford's reactors should be seen for what it truly is - pure and dangerous folly. There is absolutely no justification for a restart for any purpose without a fully funded and verifiably safe cleanup regime. The DOE's current position on FFTF represents a dangerous abandonment of common sense as well as their obligation to protect the health and safety of citizens of the Pacific Northwest.

1221 S.W. Fourth Ave., Room 210 • Portland, OR 97204-1997

## Response to Commentor No. 2019

consists of a subcommittee of DOE's Nuclear Energy Research Advisory Committee (NERAC), established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. The members of this Subcommittee were selected based upon their expertise and experience in the production, processing, distribution, and application of stable and radioactive isotopes in the biological and physical sciences, and in medicine. The members included basic and clinical scientists, administrators, the radiopharmaceutical industry, and users of isotopes from academia and the federal government. The studies that were conducted by these expert committees looked at the economics of medical isotope production. The Expert Panel and NERAC reports were each used in developing the NI PEIS, and made available to the public at the NI PEIS public information centers and on the Internet at [www.nuclear.gov](http://www.nuclear.gov)

2019-206

2019-207

2019-206

**2019-55:** Medical isotopes are currently being produce in the Untied States; however, the United States currently purchases approximately 90 percent of its medical radioisotopes from foreign producers, most notably Canada. However, Canada only supplies a limited number of economically attractive commercial isotopes (primarily molybdenum-99), and it does not supply research isotopes or the diverse array of medical and industrial isotopes considered in the NI PEIS. As such, reliance on Canadian sources of isotopes to satisfy projected U.S. isotope needs would not meet DOE's mission requirements. Section 1.2.1 of Volume 1 has been revised to clarify DOE's isotope production role and other producers' capabilities to fulfill U.S. isotope needs. Supplies of many research isotopes are not readily available from existing domestic or foreign sources, causing a number of medical research programs to be terminated, deferred, or seriously delayed. Under the NI PEIS proposed action and consistent with its mandates under the Atomic Energy Act, DOE would enhance its existing nuclear facility infrastructure to, among other things, more effectively support production of radioisotopes for medical applications.

As noted in Table 2-7 of the PEIS, the total volume of radioactive waste produced by use of either the FFTF or a new accelerator would be close to the same, with the accelerator alternative actually producing

## Commentor No. 2019: Mary Lou Blazek (Cont'd)

### Oregon Office of Energy

Appendix F

## Memorandum

To: Oregon Office of Energy  
 From: David V. Yaden  
 Date: 8/14/00  
 Subj: Comments on DEIS for restart of FFTF

The following comments are based on reading of the summary, not the full document. The cost study was not available for review. In addition, the National Research Council report *Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites* was reviewed.

- The DEIS is disingenuous in presenting the alternatives as a response to critical DOE "programmatic needs." The document reads more as a justification than an evaluation.
- The missions proposed for FFTF are not compelling. The "needs" it presents are promotional (nuclear energy), problematic (medical isotopes), or not pressing (space exploration).
- The DEIS rests heavily on an underlying ethos of wanting to maintain US technological leadership when the needs themselves suggest at least a much more aggressive look at international solutions. E.g., medical isotopes.
- The use of the DEIS to promote nuclear energy is inappropriate.
- The DEIS presents technology as both the problem and the solution for reinvigorating nuclear energy while ignoring the main obstacle: institutional capacity to deal with the waste stream.
- Even though DOE asserts that there will be a firewall between funding of NE programs and Hanford cleanup, this is not true for Congress and administrations who set overall funding levels for DOE.
- Unfortunately, due to its abysmal record on cleanup, DOE has lost credibility I used to grant it. I now believe DOE should not be allowed any further mission that will promote and prolong its nuclear activities until it demonstrates even a modicum of competence and commitment to cleanup.

2019-208

2019-209

2019-210

2019-211

## Response to Commentor No. 2019

slightly more waste. However, it should be noted that a reactor produces spent nuclear fuel, while an accelerator does not.

**2019-56:** DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings. Section 1.2.1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

**2019-57:** The Spallation Neutron Source at ORR was considered, but was dismissed since once completed it will be fully dedicated to other planned missions (see Section 2.6.1 of Volume 1).

**2019-58:** See response to 2019-56.

**2019-59:** DOE notes the commentor's opposition to Alternative 1, Restart FFTF, and concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement.

DOE's also notes the commentor's lack of confidence in DOE.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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- 2019-60:** The waste generated by each alternative and alternative option were compared to the site's current waste generation. Section 4.8.3 was revised to include waste treatment, storage and disposal facility capacities so that the total maximum waste volume that would be generated for each site in addition to current site activities and reasonably foreseeable activities can be compared to the site's storage, treatment and disposal capacities.
- 2019-61:** All environmental parameters (e.g. air, soil, surface water, groundwater, vegetation, animals, fish, etc.) in and around the Hanford Site are monitored on a set frequency. The information is available to the public in annual environmental monitoring reports. Cumulative impacts as a result of the proposed action are included in Section 4.8 of the PEIS.

DOE notes the commentor's concerns regarding the risk of contamination to the Columbia River. FFTF is approximately 4.5 miles from the Columbia River. There are no discharges to the river from FFTF and no radioactive or hazardous discharges to groundwater. As indicated in analyses presented in Chapter 4 of Volume 1 (e.g., Sections 4.3.1.1.4, 4.3.3.1.4, 4.4.3.1.4, 4.5.3.2.4, and 4.6.3.2.4), there would be no discernible impacts to groundwater or surface water quality at Hanford from operation of Hanford facilities that would support the nuclear infrastructure missions described in Section 1.2 of Volume 1.

DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. The U.S. Congress funds the Hanford cleanup through the Office of the Assistant Secretary for Environmental Management (EM), and the FFTF through the Office of Nuclear Energy, Science and Technology (NE). The nuclear infrastructure missions described in Section 1.2 of Volume 1 would also be funded by NE, which has no funding connection to Hanford cleanup activities. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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funds designated for Hanford cleanup, regardless of the alternative(s) selected.

- 2019-62:** FFTF can be safely operated to support the nuclear infrastructure missions described in Section 1.2 of Volume 1. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1, including normal operations and a spectrum of accidents that included severe accidents. The accident analysis included a review of internal events (e.g., equipment failures, human errors), external events (e.g., airplane crashes, nearby explosions, fires), natural phenomena (e.g., floods, tornadoes, earthquakes), common-cause events, and sabotage and terrorist activities. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small.
- 2019-63:** The individual site baselines for the 35-year nuclear infrastructure operation were obtained from the best available site information. The sources for this information are cited in the Section 4.8 of the NI PEIS. The cumulative impact tables for waste management have been revised to include the individual site's storage, treatment and disposal capacities for comparison.
- 2019-64:** Alternative 1 does postulate that DOE might decide at some point to import mixed oxide fuel from Europe to fuel FFTF. At this time, however, DOE has not proposed to import this fuel through any specific port. If DOE ultimately decides to import fuel from Europe, it would perform a separate NEPA analysis to select a port. This review would address all relevant potential impacts of overseas and inland water transportation, shipboard fires, package handling, land transportation, as well as safeguards and security associated with the import of SNR-300 mixed oxide fuel through a variety of specific candidate ports on the east and west coasts. It would consider all public comments, including local resolutions, concerning the desirability of bringing mixed oxide fuel into the proposed alternative ports.

In the event that DOE decides to enhance its nuclear infrastructure, it would not expose any population to high, unacceptable risks under any alternative. Any transportation activities that would be conducted by DOE would comply with U.S. Nuclear Regulatory Commission and U.S. Department of Transportation regulations. Associated

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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transatlantic shipment would comply with International Atomic Energy Agency requirements. In Section J.6.2, DOE reviewed the potential maximum impacts from the marine transportation of mixed oxide fuel from Europe to a representative military port, Charleston, South Carolina, and overland transportation to Hanford. Also in that section, a bounding analysis demonstrates that the maximum potential radiological risks to the surrounding public from mixed oxide fuel shipments would be extremely small (e.g., less than 1 chance in a trillion for a latent cancer fatality per shipment from severe accidents at docks and in channels and less than 1 chance in 50 billion for a latent cancer fatality per shipment from overland highway accidents).

- 2019-65:** The off gases released from FFTF, including those released from the facility stack, during normal operation are provided in Appendix H Table H-7 and consist of tritium, argon, and cesium. As discussed in Section 2.3.1.1.3 of Volume 1, if Alternative 1, Restart FFTF, is selected for implementation, then the reactor would operate at a nominal 100 megawatts with periodic excursions to no more than 400 megawatts. Based on operational data from FFTF, the amount of tritium released during normal operations at 400 MW would be expected to be no more than 4 curies per year (See Table H-7, Appendix H). The release of tritium, and other radionuclides, was used to determine the public health impacts from normal operation of the FFTF. The analysis showed that the most likely health impact from these releases was no additional health impact among the population surrounding the Hanford.
- 2019-66:** The NI PEIS addresses the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed actions for all alternatives and alternative options. Waste treatment, storage, and disposal facilities for the wastes expected to be generated are identified in Chapter 4 under the Waste Management sections of the NI PEIS. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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Hanford, INEEL, and ORR environmental restoration activities are conducted in accordance with the individual DOE site's agreements with their appropriate regulatory agency. These agreements specify milestones and schedules for restoration of the individual DOE sites. These cleanup agreements are discussed in Chapter 3 of the NI PEIS under the waste management sections for each of the DOE sites under consideration.

DOE does not stockpile large quantities of Russian plutonium-238 long in advance of needs due to budget constraints and the additional processing required to remove decay products that occur following extended storage of the material.

**2019-67:** Worker safety (radiological protection) is a key element of DOE's Radiological Health and Safety Policy (DOE P 441.1, April 26 1996) This policy states in part that Department of Energy facilities must "conduct radiological operations in a manner that controls the spread of radioactive materials and reduces exposure to the workforce and the general public and that utilizes a process that seeks exposure levels as low as reasonably achievable." Each Department of Energy site, including Hanford, is required to implement a radiological control program with the intent to meet this policy goal. The health and safety impacts on workers associated with both medical isotope production and plutonium production are presented in Appendix H of the NI PEIS, see Table H-13. Based on the assessment of worker health impacts for the range of reasonable alternatives and options that make use of Hanford facilities, the most likely impact of the use of these facilities is no increase in cancer fatalities among the facility workers. For example in Alternative 1 option 3, all of the activities target irradiation and processing) occur at Hanford facilities. As shown in Section 4.3.3.1.9, the expected consequences are less than one additional fatal cancer among the workforce; that is, no additional fatal cancers are expected.

**2019-68:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement.

The U.S. Congress funds the Hanford cleanup through the Office of the Assistant Secretary for Environmental Management (EM), and the FFTF through the Office of Nuclear Energy, Science and Technology (NE). The nuclear infrastructure missions described in Section 1.2 of Volume 1 would also be funded by NE, which has no funding connection to Hanford cleanup activities. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

- 2019-69:** The environmental impacts associated with all nuclear infrastructure activities are addressed in Chapter 4 of the NI PEIS. The results of the detailed assessments are included for each of the alternative options evaluated. It is not suggested that there are no associated environmental impacts; these are presented in detail in Chapter 4. However, for options that do not require new construction, e.g., all options under the Restart FFTF Alternative, there would be no impacts on certain disciplines such as land use, visual resources, and cultural and paleontological resources; these specific situations are also addressed in the pertinent sections of Chapter 4.
- 2019-70:** See response to 2019-61.
- 2019-71:** The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed action for all alternatives and alternative options. The cumulative impact tables for waste management in Section 4.8.3 of the NI PEIS have been revised to include the individual site's storage, treatment and disposal capacities for comparison. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.
- 2019-72:** See response 2019-61.
- 2019-73:** The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed action for

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

---

all alternatives and alternative options. Waste treatment, storage, and disposal facilities for the wastes expected to be generated are identified in Chapter 4 under the Waste Management sections of the NI PEIS. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders. Spent nuclear fuel disposition is detailed in Chapter 4 of the NI PEIS for each of the alternatives that would involve spent nuclear fuel generation.

The NI PEIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada, would be the final disposal site for DOE's high level radioactive waste and spent nuclear fuel. As directed by the U.S. Congress through the Nuclear Waste Policy Act, as amended, Yucca Mountain is the only candidate site currently being characterized as a potential geologic repository for high-level radioactive waste and spent nuclear fuel. DOE has prepared a separate EIS, "Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada" (DOE/EIS-0250D, July 1999), which analyzes the environmental impacts from construction, operation and monitoring related transportation, and eventual closure of a potential geological repository.

- 2019-74:** FFTF can be safely operated to support the nuclear infrastructure missions described in Section 1.2 of Volume 1. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1, including normal operations and a spectrum of accidents that included severe accidents. The accident analysis included a review of internal events (e.g., sodium spills, equipment failures, human errors), external events (e.g., airplane crashes, nearby explosions, fires), natural phenomena (e.g., floods, tornadoes, earthquakes), common-cause events, and sabotage and terrorist activities. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. Prior to an FFTF restart, a revised safety analysis report and a probabilistic risk assessment would be prepared which would address any changes in plant configuration,



***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

---

operating conditions and procedures. The revised safety analyses would be based on all applicable orders and standards, including current seismic requirements, and then subjected to a thorough independent review process.

**2019-75:** The environmental impacts associated with all nuclear infrastructure activities are addressed in Chapter 4 of the NI PEIS. Specific to waste management, the NI PEIS addresses the environmental impacts due to the treatment, storage, and disposal of all wastes generated by the stated missions for all alternatives and alternative options. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable federal and state laws and regulations and appropriate DOE Orders.

The accidents considered in the NI PEIS are based on a complete spectrum of postulated accidents, ranging from high-probability low consequence events to extremely unlikely and incredible events. The consequences and risks associated with waste storage would be bounded by these accidents. Appendix I of the NI PEIS addresses all accidents in detail.

**2019-76:** See response 2019-61.

**2019-77:** As identified in Section 4.3.1.1.13 of the NI PEIS, the restart of FFTF would generate about 63 cubic meters of additional radioactive waste (e.g., solid low-level radioactive waste) annually, in addition to nonhazardous wastes. This would account for about 2,205 cubic meters of additional radioactive waste to be generated over the 35-year period of nuclear infrastructure operations and is small in comparison to the waste generated by current Hanford activities. It is DOE's policy that all wastes be managed (i.e., treated, stored and disposal) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.

The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed actions

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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for all alternatives and alternative options. Waste minimization programs at each of the proposed sites are also addressed.

**2019-78:** Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement.

The U.S. Congress funds the Hanford cleanup through the Office of the Assistant Secretary for Environmental Management (EM), and the FFTF through the Office of Nuclear Energy, Science and Technology (NE). The nuclear infrastructure missions described in Section 1.2 of Volume 1 would also be funded by NE, which has no funding connection to Hanford cleanup activities. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

Spent FFTF fuel is currently stored onsite in 50-year storage containers.

**2019-79:** DOE notes the commentor's hesitance to support restarting FFTF for expanding its existing nuclear facility infrastructure. Consistent with its mandates under the Atomic Energy Act, DOE is proposing this enhancement for the purposes of addressing three primary needs:

1) to support the need for increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;

2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and which the U.S. has no long-term, assured supply; and

3) to support civilian nuclear research and development needs in order to maintain the clean, safe, and reliable use of nuclear power as a viable component of the United States' energy portfolio.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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**2019-80:** The FFTF is currently being maintained in a standby condition by approximately 242 personnel. These make up the a large portion of personnel needed to restart FFTF. The Hanford site estimates only 168 additional workers would be required. It is possible that some of these positions could be filled from other projects at Hanford.

**2019-81:** DOE notes the commentor's concerns for additional detail on groundwater conditions at Hanford, including effects of withdrawals on contaminant plumes and effects on groundwater quality from percolation sources.

CEQ regulations for implementing NEPA specify that affected environment descriptions and environmental impact analyses in an EIS are to be discussed at a level of detail proportionate to expected level of impact (40 CFR 1502.2 and 40 CFR 1502.15). This NI PEIS meets or exceeds the CEQ requirements. Section 3.4.4.2.1 provides a general description of the Hanford groundwater environment. Discussions of groundwater resources and quality in the Hanford 400 Area are provided in Section 3.4.4.2.2. These sections describe the general extent of groundwater contamination across the Hanford Site. Generalized groundwater contamination maps have been added under Section 3.4.4.2 in the Final NI PEIS as a visual aid to understanding discussions of groundwater contamination at the Hanford Site.

Analyses presented in Chapter 4 of Volume 1 (e.g., Sections 4.3.1.1.4, 4.3.3.1.4) indicate that there would be no measurable impact on regional groundwater levels from increased groundwater withdrawals that would result from restarting FFTF. While restart of FFTF could potentially affect groundwater flow direction on a localized basis (i.e., around the well field), it would not be sufficient to measurably affect regional groundwater levels or contaminant plumes within the unconfined aquifer system. Little or no effect would be expected on the 400 Area nitrate plume that originates just to the north of the FFTF complex or on the site-wide tritium and nitrate plumes which originate outside of the 400 Area. There is no indication that the 197 million liters (52 million gallons) of groundwater withdrawn annually in the 400 Area has had any effect on area or regional groundwater flow or on plume configurations. Water-level elevation maps published in annual site groundwater monitoring reports indicate that there was no discernible effect attributable to FFTF on water-table elevation and groundwater

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

---

***Response to Commentor No. 2019***

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flow during the period when FFTF was last fully operational. Therefore, additional discussion of groundwater flow parameters, modeling results, or well completion data is not warranted.

No impacts on groundwater quality would be expected as a result of FFTF restart. As described in Volume 1, Section 3.4.4.1.2 of the NI PEIS, the only liquid effluent discharged from FFTF during current standby operations consists of process wastewater from the facility's cooling towers. This wastewater is discharged to the 400 Area Pond that allows the effluent to percolate to the subsurface. These discharges are regulated under State Waste Discharge Permit No. 4501. The effluent is continuously monitored before discharge with periodic sampling and analysis to determine compliance with effluent limitations. Aside from cooling water treatment chemicals added to control corrosion and algae growth, the only chemical and radiological constituents in the discharge are those that occur in the groundwater used for cooling tower makeup. As discussed in Section 4.3.1.1.4, restart of FFTF would increase the volume of process wastewater discharged to the pond system but would not measurably affect the quality of the effluent. There are no radiological liquid effluent pathways from FFTF.

- 2019-82:** DOE is committed to providing the public with comprehensive environmental reviews of its proposed actions in accordance with NEPA, and to providing ample opportunity for public comment on those actions. Selection of facilities and site locations for accomplishing expanded civilian nuclear energy research and development and isotope production missions is not a political decision. In preparing the Final NI PEIS, DOE carefully considered comments received from the public.
- 2019-83:** DOE could purchase plutonium-238 from Russia to satisfy its responsibility to supply NASA with the necessary fuel to support future space exploration missions. Under the current contract set to expire in 2002, the United States is authorized to purchase up to 40 kilograms of plutonium-238, with the total available for purchase in any one year limited to 10 kilograms. To date, DOE has purchased approximately 9 kilograms of plutonium-238 under this contract. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, any purchase of plutonium-238 from Russia beyond what is currently available to the

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

---

***Response to Commentor No. 2019***

---

United States through the existing contract would likely require negotiation of a new contract and may require additional NEPA review.

DOE also notes the commentor's concern that intellectual capital will be lost if the United States stops producing plutonium-238. DOE currently has the technical capability and human resources to carry out the plutonium-238 mission.

The May 22, 2000, correspondence from NASA to DOE identifies that NASA no longer has a planned requirement for small radioisotope thermoelectric generator (SRTG) power systems. This does not mean that NASA no longer requires DOE to provide the necessary plutonium-238 to support deep space missions. Rather, SRTG development efforts were stopped in order to permit reprogramming of funds to support development of a new radioisotope power system based on a Stirling technology generator. This new radioisotope power system, referred to in the subject correspondence, requires one-third less plutonium-238 as its fuel source. However, the Stirling technology is developmental and NASA has requested in a September 22, 2000, letter to DOE that large RTGs be maintained as backup. Section 1.2.2 of Volume 1 was revised to clarify plutonium-238 mission needs.

**2019-84:** DOE notes the commentor's interest in the safety of the Russian nuclear program. As discussed in Volume 1, section 1.2.2, information is limited concerning nuclear safety and domestic safeguards of foreign plutonium-238 production facilities.

**2019-85:** As explained in Section 1.2.2 of the final NI PEIS, the current inventory of plutonium-238 will be exhausted by 2005. DOE could purchase more plutonium-238 from Russia, but its preference is to reestablish a domestic production capability, because of the Russian supply uncertainty and nonproliferation concerns. See also response to 2019-83.

DOE notes the commentor's support for Alternative 5, Permanently Deactivate FFTF.

**2019-86:** Chapter 1 of Volume 1 of the NI PEIS makes the statement that "currently, approximately 50 percent of DOE's isotope production capability is being used. Much of the remaining isotope production capability is dispersed throughout the DOE complex. This capability supports secondary missions, but cannot be effectively used due to the operating constraints associated with the facilities' primary missions..."

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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This statement does not assume a resurgence of need for nuclear power. As stated in the EIS, these primary missions include basic energy sciences, as well as national defense.

- 2019-87:** The use of mixed oxide fuel that was originally fabricated for a German nuclear reactor constitutes use of nuclear fuel which has been fabricated, but no longer required by the Germans. This unused nuclear fuel is a resource which has been in storage and available since the 1980s. The Nuclear Infrastructure Nonproliferation Impacts Assessment report for the NI PEIS alternatives indicated that using the two different sources of existing mixed oxide fuel for FFTF (existing FFTF fuel and German MOX fuel) would result in significant mitigating factors, indicating that substantial nonproliferation benefits could be gained by disposing of this inventory as spent fuel.
- 2019-88:** Currently, DOE only purchases plutonium-238 from Russia. Under the current contract with Russia set to expire in 2002, the United States is authorized to purchase up to 40 kilograms of plutonium-238, with the total available for purchase in any one year limited to 10 kilograms. To date, DOE has purchased approximately 9 kilograms of plutonium-238 under this contract. Future purchases from Russia would require the negotiation of a new contract with Russia. DOE recognizes that this is a viable option and has analyzed this option under the No Action Alternative.
- 2019-89:** The import of plutonium-238 from Russia is part of the No Action Alternative. Transportation risks for importing plutonium-238 from Russia would be 0.0099 latent cancer fatalities to the public from incident free transportation and  $4.4 \times 10^{-4}$  latent cancer fatalities to the public from radiological accidents (See Section 4.2.1.1 of Volume 1). While there are differences in the total shipping distances and risks among the alternatives, the risks from transportation are small for all of the alternatives. Figures and tables in Section 2.7.1.6 summarize transportation risks and provide comparisons of transportation risks among the alternatives. Transportation risk is only one factor in DOE's decision.
- 2019-90:** The NI PEIS states that commercial light water reactors (CLWRs) can produce the necessary plutonium-238 to meet NASA space mission needs. Alternative 2, Options 4, 5, and 6 include CLWRs for the production of plutonium-238.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

---

***Response to Commentor No. 2019***

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Plutonium-238 should not be confused with weapons-grade plutonium (plutonium-239) used for defense purposes. The plutonium-238 that would be produced as a result of this proposed action would only be used for NASA space missions. The need for NASA space missions, however, is outside the scope of this NI PEIS. NASA must also comply with the National Environmental Policy Act when considering major Federal actions such as space missions. NASA has its own public participation processes to involve interested parties in its decision making processes. The need for DOE production of plutonium-238 to support NASA space missions, is however, discussed in Section 1.2.2 of Volume 1 of the NI PEIS.

- 2019-91:** DOE notes the commentor's interest in NASA's funding, although this issue is beyond the scope of this Nuclear Infrastructure EIS.
- 2019-92:** The No Action Alternative, which is required by Council on Environmental Quality regulations (40 CFE 1502.14 (d)), requires DOE to consider the continuation of its present course of action, which includes production of currently produced isotopes. Thus, the current production of medical isotopes in existing operating reactors and accelerators would continue under No Action (and all other alternative as well). The No Action Alternative provides an alternative to which the action alternatives may be compared.
- 2019-93:** The potential to split missions and consider new combinations of alternatives was considered. As addressed in Section 1.3 of Volume 1, in addition to the range of reasonable alternatives evaluated in the PEIS, DOE could choose to combine components of several alternatives in selecting the most appropriate strategy. For example DOE could select a low-energy accelerator to produce certain medical, research, and industrial isotopes, and an existing operating reactor to produce plutonium-238 and conduct nuclear research and development.
- 2019-94:** The NI PEIS states that commercial light water reactors (CLWRs) can produce the necessary plutonium-238 to meet NASA space mission needs. Alternative 2, Options 4, 5, and 6 include CLWRs for the production of plutonium-238.
- 2019-95:** DOE notes the commentor's concern for NASA's use of nuclear materials for space missions and interest in the development of alternative energy sources for space missions, although issues such as NASA research priorities are beyond the scope of this PEIS. Through

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

---

***Response to Commentor No. 2019***

---

a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. These radioisotope power systems have been used for almost 40 years, and have repeatedly demonstrated their performance, safety, and reliability in various NASA space missions. NASA establishes the need and requirements for space missions and undergoes a thorough NEPA evaluation for each launch.

**2019-96:** As presented in the Cost Report, the annual total cost for the purchase of Russian plutonium-238 is \$8.84 million (excluding the \$40 million annual cost for maintaining FFTF in standby mode). Conversely, the annual operating costs for producing plutonium-238 range from \$14.8 million (using FPDF in combination with existing irradiation facilities) to \$77.2 million (using FFTF with FMEF). These estimated production costs exclude the costs for facility modification and startup and target development, testing, and evaluation.

**2019-97:** There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory (stored at the Los Alamos National Laboratory) available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Without an assured domestic supply of plutonium-238, DOE's ability to support future NASA space exploration missions may be lost.

DOE could purchase plutonium-238 from Russia; however, for supply reliability reasons and concern of nuclear nonproliferation, DOE's preference is to establish a domestic plutonium-238 production capability. Section 1.2.2 of Volume I was revised to further clarify the purpose and need for reestablishing a domestic plutonium-238 production capability to support NASA space exploration missions.

The May 22, 2000, correspondence from NASA to DOE identifies that NASA no longer has a planned requirement for small radioisotope thermoelectric generator (SRTG) power systems. This does not mean that NASA no longer requires DOE to provide the necessary plutonium-238 to support deep space missions. Rather, SRTG development efforts were stopped in order to permit reprogramming of funds to support development of a new radioisotope power system based on a Stirling technology generator. This new radioisotope power



***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

---

***Response to Commentor No. 2019***

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system, referred to in the subject correspondence, requires one-third less plutonium-238 as its fuel source. However, the Stirling technology is developmental and NASA has requested in a September 22, 2000, letter to DOE that large RTGs be maintained as backup. Section 1.2.2 of Volume 1 was revised to clarify plutonium-238 mission needs.

- 2019-98:** DOE notes the commentor's support for Alternative 5, Permanently Deactivate FFTF.
- 2019-99:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is committed to honoring this agreement.
- 2019-100:** As stated in PEIS Section 1.2.2 Volume 1, DOE has had a contract with Russia to purchase plutonium-238 since 1992 and is aware of the existence and production capability of plutonium-238 in Russia. However, according to the Nonproliferation Impact Assessment, "the status of Russian domestic safeguards of ANM (alternate nuclear material, neptunium and americium) is largely unknown. Moreover, since there is currently no Russian moratorium on spent fuel reprocessing, and neptunium recovery is part of the Russian reprocessing flowsheet, the Russian inventory of separated weapons usable neptunium could continue to increase, even if smaller quantities of neptunium were destroyed in the production of plutonium-238." The potential nonproliferation impacts of continued purchases from Russia are discussed in Section 8.2 of the Nuclear Infrastructure Nonproliferation Impact Assessment which was published in September, 2000.
- 2019-101:** DOE notes the commentor's view. However, as stated in the NI PEIS, DOE signed a 5-year contract in 1992 to purchase plutonium-238 from Russia. Under the current contract set to expire in 2002, the United States is authorized to purchase up to 40 kilograms of plutonium-238, with the total available for purchase in any one year limited to 10 kilograms. However, DOE does not stockpile large quantities of

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

---

***Response to Commentor No. 2019***

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Russian plutonium-238 long in advance of needs due to budget constraints and the additional processing required to remove decay products that occur following extended storage of the material. To date, DOE has purchased approximately 9 kilograms of plutonium-238 under this contract. DOE recognizes that this is a viable option and has analyzed this option under the No Action Alternative.

**2019-102:** The NERAC study looked at U.S. isotope research and production planning. It evaluated domestic capabilities to support domestic isotope needs. It should be noted, however, that the United States currently purchases approximately 90 percent of its medical radioisotopes from foreign producers, most notably Canada.

**2019-103:** NASA would be the only end user of any plutonium-238 produced as a result of the NI PEIS Record of Decision. While NASA does not provide funds to DOE on an annual basis for the production of plutonium-238, payments to offset expenses are made by NASA to DOE upon delivery of radioisotope power systems.

The supply of plutonium-238 in the Russian inventory is limited. The inventory on hand is not adequate to meet the long-term needs of NASA. Russia would have to fabricate targets, irradiate targets, and startup their reprocessing plants to produce the plutonium-238. The public health and safety and the environmental impacts associated with the plutonium-238 production would be under Russian control.

**2019-104:** A separate Cost Report was prepared to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. The Cost Report presents the costs associated with purchasing plutonium-238 from Russia under the No Action Alternative as well as the use of Commercial Light Water Reactors to produce plutonium-238 under Alternative 2 (Options 4, 5, and 6). Cost associated with the construction of new accelerator(s) and a new research reactor to meet production requirements under Alternatives 3 and 4, respectively, are also presented. Specifically, the annual total cost for purchasing Russian plutonium-238 is \$8.84 million (excluding the \$40 million annual cost for maintaining FFTF in standby). The annual operating costs for producing plutonium-238 in a CLWR range from \$14.8 million (using FDPF) to \$23.4 million (using FMEF). These estimated production costs exclude the costs for facility modification and startup and target development, testing, and evaluation which range

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

---

***Response to Commentor No. 2019***

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from in total cost from \$342.4 million to \$374 million in combination with the same two processing facilities. Construction of a new research reactor is estimated to cost \$312 million. DOE has provided a summary of the Cost Report in this Final NI PEIS.

**2019-105:** This is not an area that is evaluated in the NI PEIS. DOE of Energy estimates that restarting FFTF will only require 168 additional personnel, in addition to the staff of approximately 242 which currently maintain FFTF in standby mode. As for funding for research, there are too many uncertainties to quantify any impact on OSU.

**2019-106:** The commentor's opposition to the use of FFTF, alternative 1 of this EIS, is noted.

**2019-107:** Consistent with its mandates under the Atomic Energy Act, DOE is proposing this expansion for the purposes of addressing three primary needs:

1) to support the need for increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;

2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and for which the United States has no long-term, assured supply; and

3) to support civilian nuclear research and development needs in order to maintain the clean, safe, and reliable use of nuclear power as a viable component of the United States' energy portfolio.

**2019-108:** The commentor's interest in Alternative 5 is noted. FFTF is capable of reducing the inventory of plutonium (i.e., burning it) during normal operation.

**2019-109:** DOE has no hidden agenda for weapons research and use of FFTF for classified missions. The only missions being considered are those analyzed in the NI PEIS, which are the production of isotopes for medical, research, and industrial uses; plutonium-238 production for future NASA space exploration missions; and U.S. nuclear research and development needs for civilian application. Any future uses of FFTF

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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and other facilities evaluated in the NI PEIS that are not addressed in the NI PEIS would require additional NEPA assessment.

- 2019-110:** The environmental impacts associated with operation of the FFTF for the stated missions are addressed in detail in Section 4.3 of the NI PEIS. This section specifically evaluates the incremental radiological impact to the public associated with both normal operation and postulated accident conditions. As discussed, if FFTF were to operate for 35 years, this risk would be small (less than 1 latent cancer fatality). For perspective, the radiation dose the average American receives from natural sources is about 300 mrem each year. Based on the same 35 year time period used above, approximately 2,600 latent cancer fatalities would be expected among the same population as a result of this natural (non-Hanford related) radiation exposure. In that same 35 years, about 19,000 cancer fatalities from all causes (nonradiological causes included) would be expected in the same population.
- 2019-111:** Although the FFTF is 20 years old, it is DOE's newest reactor, it is in excellent condition and evaluations have been performed to show that it has sufficient life remaining to fully support the proposed 35 year mission.
- 2019-112:** Facilities at Argonne National Laboratory-West were considered but dismissed from further consideration (see Section 1.3 of Volume 1). The Neutron Radiographic Reactor lacks sufficient neutron production capacity to support the NI PEIS proposed action without impacting existing missions, and the Transient Reactor Test Facility is not capable of steady-state neutron production. Processing facilities considered but dismissed included the Hot Fuel Examination Facility, Analytical Laboratory, and Fuel Conditioning Facility. These were not considered to be the most suitable facilities at INEEL in terms of capability, capacity, and availability.
- 2019-113:** ATR is an operating reactor (see Volume 1, Section 2.3.1.2).
- 2019-114:** The programmatic alternatives and options analyzed in the NI PEIS focus on the use of irradiation facilities that are currently operating, could be brought on line, or constructed and operated to meet DOE's irradiation needs. The Advanced Test Reactor (ATR) at INEEL is an existing DOE irradiation facility that would meet DOE's irradiation needs and is considered under Alternative 2. The NI PEIS also looks at

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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facilities for fabrication, storage, and postirradiation processing of targets. The Fluorinel Dissolution Process Facility (FDPF) and Building CPP-51 (storage only) would accomplish these activities under Alternatives 1 through 4. The selection of an alternative and option or combination of alternatives and options for meeting the purpose and need described in Section 1.2 would be based on a number of factors including environmental impacts, costs, public input, nonproliferation concerns, program objectives and schedules, technical assurance and national policy considerations.

- 2019-115:** PNNL has not prepared this PEIS. It has been prepared by a contractor under contract to DOE. (See Volume 1, Chapter 6, List of Preparers, and the contractor's disclosure statement in Volume 2, Appendix O, indicating no conflict of interest.) As the responsible Federal agency, DOE has provided guidance, reviewed, evaluated, and approved its contents, including the responses to comments. In exercising these responsibilities, DOE has provided and considered information, analyses, and data from many sources, including PNNL. All such sources are noted in the text of the PEIS and shown in the report References. Consequently, DOE does not believe that its independent consideration of referenced sources, including those of PNNL, represents a conflict of interest. DOE exercises full control over the preparation, and takes full responsibility for the contents of this PEIS.
- 2019-116:** DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual growth of medical isotope use has tracked at levels consistent with the Expert

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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Panel findings. Section 1.2.1 of Volume 1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

The conclusions presented in the NERAC Subcommittee for Isotope Research and Production Planning Final Report, April 2000 regarding the suitability of FFTF to produce research isotopes in a timely and cost-efficient manner were made in the context of the facility producing research isotopes as its sole mission. It would not be cost effective to restart FFTF for the singular purpose of producing small quantities of various research isotopes. However, sustained operation of FFTF for the production of larger quantities of both research and commercial isotopes would be viable if operated in concert with producing plutonium-238 and conducting nuclear energy research and development for civilian applications. As the NERAC report states: "In limited instances, the DOE possesses unique resources, e.g., the high flux of fast neutrons and large irradiation volume in FFTF, that could be utilized for the production of some radioisotopes, but is best suited for commercial interests who might consider its use for isotope production." In recognition of these constraints on its operational feasibility, the NI PEIS only evaluates the use of FFTF when coupled with the other missions. While some existing reactors may possess the potential capability or capacity to support research isotope production, as suggested in the NERAC report, it is unlikely that reliable, increased production of these isotopes to support projected needs could be accomplished without impacting the existing missions of these facilities.

DOE has taken the Expert Panel and NERAC report recommendations under consideration in developing the range of alternatives evaluated in the NI PEIS. These reports were made available to the public at the NI PEIS public information centers and on the Internet at [www.nuclear.gov](http://www.nuclear.gov).

**2019-117:** DOE notes the commentor's concern over the credibility of the nuclear industry, although this issue is beyond the scope of this NI PEIS. The scope of this EIS is limited to analysis of alternatives to fulfill the requirements of the DOE missions, which include the production of medical and industrial isotopes, the production of plutonium-238, and civilian nuclear energy research and development.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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Civilian nuclear energy research initiatives are discussed in Volume 1, section 1.2.3. Further information can be found at the Office of Nuclear Energy, Science, and Technology web site, <http://www.nuclear.gov/>.

- 2019-118:** Although the 50 megawatt power level of the new TRIGA research reactor is larger than the largest currently operating TRIGA reactor power of 16 megawatts, the fuel design is almost identical to the current TRIGA 10 megawatt high power design and the system thermal hydraulic performance represents a linear extrapolation of existing designs. The 50 megawatt TRIGA reactor design has been discussed with General Atomics, the TRIGA reactor design corporation. It is technically feasible to build a 50 megawatt TRIGA research reactor.
- 2019-119:** As discussed in the text that accompanies the figure on page S-46 of the draft Summary, radiological accident risks are driven by activities at the fabrication/processing facilities that support the production of radioisotopes. Production of radioisotopes is discussed in Sections 1.2.1 and 1.2.2 of Volume 1. The figure summarizes information that is separately available throughout Chapter 4. Information is not presented by mission because the alternatives (described in Section 2.5 of Volume 1) provide multiple options for accomplishing the missions listed in Section 1.2 of the NI PEIS. A cost-benefit analysis is optional under the Council on Environmental Quality implementation regulations and none was prepared for the NI PEIS. The figure on page S-46 illustrates that the radiological accident risk that would result at a new reactor would be small relative to the risks attributable to accidents at the fabrication/processing facilities.
- 2019-120:** Impacts from the deactivation of FFTF are presented in section 4.4.1.2. of the NI PEIS. Specifically risks associated with normal operations are presented in Section 4.4.1.2.9, accident risks are presented in Section 4.4.1.2.10, and transportation risks are presented in Section 4.4.1.2.11. The environmental analysis showed that radiological and nonradiological risks associated with deactivating FFTF would be small.
- 2019-121:** In Chapter 4 of the NI PEIS, the impact analyses assess all disciplines where the potential exists for effects on the environment. These disciplines are the same as those generally assessed in environmental impact statements prepared by DOE. None of the disciplines is considered to be “non-traditional.”

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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- 2019-122:** Clean, safe, reliable nuclear power has a role today and in the future for our national energy security. In recognition of this need, nuclear energy research and development programs have been initiated to address potential long-term barriers to expanded use of nuclear power (e.g., nuclear waste, proliferation, safety, and economics) and to ensure that current nuclear power plants can continue to deliver adequate and affordable energy supplies. Because it is unlikely that existing facilities could fully and effectively support these nuclear energy research and development initiatives without disturbing their existing missions, DOE is proposing to enhance its nuclear facility infrastructure to also support these activities. Further information on the need for nuclear energy research and development is provided in Section 1.2.3 of Volume 1.
- 2019-123:** See the response to Comment 2019-118. No single irradiation facility can meet all the NI PEIS mission needs (see Section 2.7 of Volume 1) (e.g., the current TRIGA reactor design), nor will multiple small reactors completely meet these needs.
- 2019-124:** If a Record of Decision selects Alternative 4, Construct New Research Reactor, it would be located at an existing DOE site. However, the specific site is unknown at this time. If Alternative 4 is selected, site specific NEPA documentation would be completed prior to site selection and the start of detailed design.
- 2019-125:** Alternative 3 involves constructing a new accelerator(s) at an existing, but as yet unidentified DOE site. Alternative 3 as written does include the permanent deactivation of FFTF; however, since a decision can include components of various alternatives, a combination of restarting FFTF and the construction of an accelerator can be selected. The siting of that accelerator would be determined through a separate site-specific NEPA review.
- 2019-126:** DOE notes the commentor's opposition to Alternative 1, Restart FFTF.
- 2019-127:** DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. The first, a thirteen member Expert Panel convened in 1998 to forecast future demand for medical isotopes, included academicians from leading medical universities and schools of public health, and professional affiliations



***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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ranging from the National Cancer Institute to manufacturers of radiopharmaceuticals. The second consists of a subcommittee of DOE's Nuclear Energy Research Advisory Committee (NERAC), established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. The members of this Subcommittee were selected based upon their expertise and experience in the production, processing, distribution, and application of stable and radioactive isotopes in the biological and physical sciences, and in medicine. The members included basic and clinical scientists, administrators, and users of isotopes from academia, industry, and the federal government.

DOE is aware that there is a considerable difference of public opinion regarding the alternatives evaluated in this NI PEIS to accomplish the DOE missions, including direct support as well as opposition to Alternative 1, Restart FFTF, on the part of members of the public, interest groups, and government bodies. It is further recognized that waste generation and its management is of particular concern. Analyses presented in Chapter 4 of the NI PEIS (e.g., Sections 4.3.1.1.13, 4.3.3.1.13) assess the impact on waste management infrastructure from operation of existing facilities (FFTF, FMEF, and 300 Area facilities) at Hanford in support of the missions. Further, the waste generated from the facilities proposed for use at Hanford will be managed (i.e., treated, stored, and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and DOE orders. The Hanford Site also has a comprehensive waste minimization and pollution prevention program in place as summarized in Volume 1, Section 3.4.11.8 that would govern any proposed site activities. The Record of Decision for the PEIS will be based on a number of factors including environmental impacts, costs, public input, nonproliferation issues, schedules, technical assurance, policy, and program objectives.

**2019-128:** Socioeconomic impacts associated with Alternative 1, Restarting FFTF, are discussed in Section 4.3 of the NI PEIS.

**2019-129:** See response to comment 2019-126.

**2019-130:** In January 1997, President Clinton tasked his Committee of Advisors on Science and Technology (PCAST) to evaluate the current national energy research and development portfolio and to provide a strategy that ensures the United States has a program to address the Nation's

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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energy and environmental needs for the next century. In its November 1997 report responding to this request, the PCAST Energy Research and Development Panel determined that restoring a viable nuclear energy option to help meet our future energy needs is important and that a properly focused research and development effort to address the potential long-term barriers to expanded use of nuclear power (e.g., nuclear waste, proliferation, safety, and economics) was appropriate. The PCAST panel further recommended that DOE reinvigorate its nuclear energy research and development activities to address these potential barriers.

It is current U.S. policy that clean, safe, reliable nuclear power has a role today and in the future for our national energy security. Recognizing this need, the U.S. has initiated two new significant nuclear energy research and development programs: the Nuclear Energy Research Initiative and Nuclear Energy Power Optimization. The Nuclear Energy Research Initiative program sponsors new and innovative scientific and engineering research and development to address the potential long-term barriers affecting the future use of nuclear energy identified by the PCAST panel. The Nuclear Energy Power Optimization program, a cost-shared program with industry, sponsors applied research and development to ensure that current nuclear plants can continue to deliver adequate and affordable energy supplies up to and beyond their initial 40-year license period by resolving open issues related to plant aging and by applying new technologies to improve plant reliability, availability, and productivity.

The Nuclear Energy Research Advisory Committee (NERAC) Subcommittee on Long-term Planning for Nuclear Energy Research, an independent expert panel established by DOE, has set forth a recommended 20-year research and development plan to guide DOE's nuclear energy programs in areas of material research, nuclear fuel, and reactor technology development. This plan stresses the need for DOE facilities to sustain the nuclear energy research mission in the years ahead. Such nuclear research and development initiatives requiring an enhanced DOE nuclear facility infrastructure fall into three basic categories: materials research, nuclear fuel research, and advanced reactor development.

**2019-131:** Other than the missions discussed in the NI PEIS, no alternate uses for FFTF are being considered at this time. None of the alternatives in the

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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NI PEIS include defense missions and would not contribute to future weapons production. Any future uses of FFTF and other facilities evaluated in the NI PEIS that are not addressed in the NI PEIS would require additional NEPA assessment.

**2019-132:** The additional radioactive waste that would be generated from the restart of FFTF (i.e., low-level radioactive waste) would not be stored in the high-level radioactive waste tanks located at Hanford.

Management of wastes that would be generated under implementation of Alternative 1, Restart FFTF, is discussed in Section 4.3 of Volume 1 (e.g., see Section 4.3.1.1.13). Section 4.3.1.1.13 was revised to clarify that, the Hanford waste management infrastructure is analyzed in this PEIS for the management of waste resulting from FFTF restart and operation. This analysis is consistent with policy and DOE Order 435.1, that DOE radioactive waste shall be treated, stored, and in the case of low-level waste, disposed of at the site where the waste is generated, if practical; or at another DOE facility. However, if DOE determines that use of the Hanford waste management infrastructure or other DOE sites is not practical or cost effective, DOE may issue an exemption under DOE Order 435.1 for the use of non-DOE facilities (i.e., commercial facilities) to store, treat, and dispose of such waste generated from the restart and operation of FFTF. In addition, Section 4.3.3.1.13 and 4.4.3.1.13 also address the potential impacts associated with the waste generated from the target fabrication and processing in FMEF and how this waste would be managed at the site.

**2019-133:** DOE notes the commentor's opposition to some of the missions addressed in the NI PEIS.

**2019-134:** DOE policy encourages effective public participation in its decision making process. In compliance with NEPA and CEQ regulations, DOE provided opportunity to the public to comment on the scope of the NI PEIS and the environmental impact analysis of DOE's proposed alternatives. DOE gave equal consideration to all comments. In preparing the Final NI PEIS, DOE carefully considered comments received from the public.

**2019-135:** This NI PEIS has examined the risks associated with the operation of the FFTF for 35 years for the purpose of producing isotopes for medical use, research and development, and for the production of

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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radioactive heat sources for power supply systems. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1 (which includes restart of FFTF), including normal operations and a spectrum of accidents that included severe accidents. Accident analysis is described in Appendix I and the normal operations risk analysis is described in Appendix H.) The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small. Based upon these analyses, as well as the previous safe operation of the facility, FFTF can be operated safely to accomplish DOE missions. Additionally, in the event that FFTF restart is selected, a new Safety Analysis Report will be prepared and subjected to a thorough independent review process. The facility reanalysis as part of the Safety Analysis Report update process would ensure that the analyses bound the reactor-operating envelope for the duration of FFTF operation. The Safety Analysis Report would be routinely reassessed and updated when required to address any changes in plant configuration or changes in plant operation procedures. This continuing safety analysis updating would include analysis of changes that may occur as a result of facility aging during the 35 years of operation

**2019-136:** DOE has assumed that the commentor is questioning the general view of the public in the Tri-Cities region of Washington State toward the alternatives, particularly Alternative 1, Restart FFTF, to accomplish the missions alternatives evaluated in this NI PEIS. The transcript from the public hearing and DOE's responses to all comments made or submitted during the hearing are contained in the Comment Response Document of this NI PEIS. At the Richland, Washington public hearing held on August 31, 2000, there were a total of 93 commentors. Of these, 75 or about 81 percent expressed support for Alternative 1 while 16 or about 17 percent were opposed; 2 commentors did not specifically state an alternative preference in their comments.

**2019-137:** The purpose of the NI PEIS is to evaluate the potential environmental impacts associated with the proposed enhancement of DOE's nuclear infrastructure to fulfill three missions DOE is responsible for under the authority of the Atomic Energy Act: ensuring the availability of isotopes for medical, industrial, and research applications; meeting the nuclear material needs of other Federal agencies (i.e., NASA); and

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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undertaking research and development activities related to development of nuclear power for civilian use.

DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings. Section 1.2.1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, DOE recognizes that any purchase beyond what is currently available to the United States through the existing

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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contract would likely require negotiation of a new contract and may require additional NEPA review.

It is current U.S. policy that clean, safe, reliable nuclear power continue as a viable component of the United States' energy portfolio. In recognition of this need, the U.S. has initiated nuclear energy research and development programs to address potential long-term barriers to expanded use of nuclear power (e.g., nuclear waste, proliferation, safety, and economics) and to ensure that current nuclear power plants can continue to deliver adequate and affordable energy supplies. An enhanced DOE nuclear facility infrastructure is required to support such nuclear energy research and development for civilian applications.

**2019-138:** DOE evaluated the capabilities and availability of existing government, university, and commercial accelerators (see Volume 1, section 2.6.1). There were no accelerators identified which could be used to meet the stated mission requirements.

**2019-139:** DOE's decisionmaking procedures are outlined in 10 CFR 1021.210, which have been adopted in accordance with CEQ regulations (40 CFR 1505.1). DOE will consider the information presented in the NI PEIS as well as public and agency comments, including DOE's responses to those comments. Information contained in the Cost Report and the Nuclear Infrastructure Nonproliferation Impacts Assessment will also be considered. These information sources taken in consideration with the technical merits and timelines required to meet DOE policy and mission objectives will be used by the decisionmaker (The Secretary of Energy) in selection of an alternative, or alternative elements, from the range of alternatives evaluated in the NI PEIS. This decision will be published in a Record of Decision along with the supporting information required by CEQ and DOE regulations (40 CFR 1505.2 and 10 CFR 1021.315, respectively). DOE's Record of Decision for the NI PEIS will be based on a number of factors including environmental impacts, public input, costs, nonproliferation impacts, schedules, technical assurance, and other policy and programmatic objectives.

**2019-140:** The conclusions presented in the "NERAC Subcommittee for Isotope Research and Production Planning Final Report, April 2000" regarding the suitability of the Fast Flux Test Facility (FFTF) to produce research isotopes in a timely and cost-efficient manner were made in the context of the facility producing research isotopes as its sole mission.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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DOE agrees that the FFTF's large size and configuration are not particularly well suited for the singular purpose of producing small quantities of various research isotopes. However, sustained operation of the FFTF for the production of both research and commercial isotopes would be viable if operated in concert with producing plutonium-238 and conducting nuclear energy research and development for civilian applications. As the NERAC report states: "In limited instances, the DOE possesses unique resources, e.g., the high flux of fast neutrons and large irradiation volume in FFTF, that could be utilized for the production of some radioisotopes, but is best suited for commercial interests who might consider its use for isotope production." In recognition of these constraints on its operational feasibility, the NI PEIS only evaluates use of the FFTF when coupled with the other proposed missions. While some existing reactors may possess the potential capability or capacity to support research isotope production, as suggested in the NERAC report, it is unlikely that reliable, increased production of these isotopes to support projected needs could be accomplished without disturbing the existing missions of these facilities.

**2019-141:** See response 2019-61.

FFTF is approximately 4.5 miles from the Columbia River. There are no discharges to the river from FFTF and no radioactive or hazardous discharges to groundwater. As indicated in analyses presented in Chapter 4 of Volume 1 (e.g., Sections 4.3.1.1.4, 4.3.3.1.4, 4.4.3.1.4, 4.5.3.2.4, and 4.6.3.2.4), there would be no discernible impacts to groundwater or surface water quality at Hanford from operation of Hanford facilities that would support the nuclear infrastructure missions described in Section 1.2 of Volume 1.

**2019-142:** See response to comment 2019-98.

**2019-143:** The reader is referred to the response to Comment No. 2019-81 above.

Analyses presented in Chapter 4 of Volume 1 (e.g., Sections 4.3.1.1.4, 4.3.3.1.4) indicate that restart of FFTF under Alternative 1 and subsequent operations would neither be expected to affect nor be affected by existing groundwater contamination. As discussed in Section 3.4.4.2.2, the quality of water supplied via the 400 Area's three wells is closely monitored and, thus, any deterioration in water quality supplied to FFTF would be detected.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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**2019-144:** DOE notes the commentor's views that assumptions and bases for the proposed action are not valid. Consistent with its mandates under the Atomic Energy Act, DOE is proposing this enhancement for the purposes of addressing three primary needs:

1) to support the increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;

2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and for which the U.S. has no long-term, assured supply; and

3) to support civilian nuclear energy research and development in order to maintain the clean, safe, and reliable use of nuclear power as a viable component of the United States' energy portfolio.

A separate Cost Report was prepared to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. The Cost Report was mailed to interested parties on August 24, 2000 and made available on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has provided a summary of the Cost Report in Appendix P of the Final NI PEIS. The NI PEIS adequately address such issues as target processing waste disposal, groundwater impacts, and transportation impacts. Groundwater quality and usage impacts were determined to be negligible to relatively minor for most alternatives and options with the exception of the projected requirement for relatively large quantities of water groundwater or surface water) for operation of the high-energy accelerator and research reactor under Alternatives 3 and 4, respectively. Also, the risks and potential human health risks from roadway and marine (for Alternative 1) transportation of all materials (mixed-oxide fuel under Alternative 1, target materials, and isotopes) are addressed in the applicable sections of Chapter 4. All environmental and human health impacts are assessed, with a revised summary of impacts provided in Volume 1, Section 2.7 of this NI PEIS.

**2019-145:** The nuclear infrastructure missions as set forth in the NI PEIS can be accomplished without the use of Hanford facilities. For example, a new



***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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accelerator(s) or research reactor (and support facility) could be constructed at a DOE site other than Hanford and plutonium-238 target fabrication and processing accomplished at either ORR or INEEL.

**2019-146:** DOE notes the commentor's support for Alternative 1, Restart FFTF. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected. . Further, none of the stated missions are defense- or weapons-related.

**2019-147:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

**2019-148:** DOE has made every effort to provide the public with adequate information in the NI PEIS. The FFTF could be deactivated if other facilities are selected (in the Record of Decision) to produce plutonium-238 and medical and research isotopes. In fact, permanent deactivation of FFTF is a part of each alternative except the No Action Alternative and Alternative 5, Permanently Deactivate FFTF. The commentor is referenced to Appendixes A through F for technical information related to target fabrication and processing and reactor operations. With respect to costs, DOE has prepared a separate cost report that it has made available to the public.

**2019-149:** See response 2019-61.

**2019-150:** See response to comment 2019/98. DOE notes the commentor's concern about the cost of operating FFTF. Cost issues would be among the factors considered in connection with decisions on FFTF implementation. DOE prepared a separate Cost Report to provide additional pertinent information to the Secretary of Energy so that he

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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may make an informed decision with respect to the alternatives presented in the NI PEIS. Such an ancillary document need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed this document to about 730 interested parties on August 24, 2000. The report was made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided a summary of the Cost Report in Appendix P in the Final NI PEIS.

- 2019-151:** Volume 1, Section 2.7 of this NI PEIS has been revised to include a summary of environmental impacts organized by environmental resource and includes impacts summary tables so that the incremental impacts to each area (e.g., occupational and public health and safety, waste management) can be easily compared across all alternatives and between options. In addition, a summary of cost impacts has also been added to this Final NI PEIS. However, costs associated with waste production and cleanup of existing contamination are beyond the scope of this PEIS. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram funds designated for Hanford cleanup, regardless of the alternative(s) selected.
- 2019-152:** DOE notes the commentor's support for an alternative that combines elements of the No Action Alternative (purchase plutonium-238 from Russia) and Alternative 1, Restart FFTF (for medical/industrial isotopes), or their desire to see FFTF permanently deactivated (Alternative 5) if the suggested alternative is not selected.
- 2019-153:** The estimated costs of the range of reasonable alternatives are presented in the Cost Report, summarized in Appendix P of the Final NI PEIS. However, the Cost Report is not a cost-benefit analysis. While it is reasonable to believe that the benefits of medical isotopes are substantial, the purpose of this NI PEIS is to describe the nuclear infrastructure missions (Section 1.2 of Volume 1), a range of reasonable alternatives for satisfying the mission requirements (Section 2.5 of Volume 1), and the environmental impacts that would result from implementation of the alternatives. According to 40 CFR Section 1502.23, if a cost-benefit analysis exists, it must be reported and summarized in the NI PEIS.

**2019-154:** See response to comment 2019-150.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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- 2019-155:** DOE notes the commentor's concern that the NI PEIS and the associated decisions to be made are complex. DOE strives to produce NEPA documentation and related materials that are easily understood by the public by avoiding the use of jargon, defining technical terms and concepts through the use of common comparisons, avoiding the use of acronyms to the extent possible, and provision of a Summary that is clear and concise, among other means. In order to improve the public's comprehension and understanding of the PEIS, this Final NI PEIS reflects revisions that have been made to eliminate some redundant and extraneous information while some sections have been reorganized to improve readability. In accordance with CEQ requirements for implementing NEPA, DOE provided a relatively brief summary document for both the Draft and Final NI PEIS to facilitate the public's understanding of the purpose and need, alternatives being considered for implementation, and associated incremental and cumulative impacts of the proposed actions.
- 2019-156:** Sections 4.3.1.1.13, 4.3.2.1.13, 4.3.3.1.13, and 4.4.3.1.13 were revised to address comments received during the public comment period. This section now states that "DOE is considering whether the waste from processing of irradiated neptunium-237 targets should be classified as high-level radioactive waste and not transuranic waste. Irrespective of how the waste is classified (i.e., transuranic or high-level radioactive waste), the composition and characteristics are the same and the waste management activities (i.e., treatment and onsite storage) as described in this NI PEIS would be the same. In addition, either waste type would require disposal in a suitable repository. If it is transuranic waste, it would be nondefense waste and could not be disposed of at WIPP under current law. Because nondefense transuranic waste has no current disposal path, DOE Headquarters' approval would be necessary before a decision is made to generate such waste, as required by DOE Order 435.1. If the waste is classified as high-level radioactive waste, it is assumed for the purposes of this analysis that Yucca Mountain, Nevada, if approved, would be the final disposal site for DOE's high level radioactive waste."
- 2019-157:** The costs of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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alternatives presented in the NI PEIS. Such an ancillary document need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed this document to about 730 interested parties on August 24, 2000. The report was made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided a summary of the Cost Report in Appendix P in the Final NI PEIS.

**2019-158:** The purpose of the NI PEIS, as discussed in Section 1.2, is to evaluate the potential environmental impacts associated with the proposed enhancement of DOE's nuclear infrastructure to fulfill three missions DOE is responsible for under the authority of the Atomic Energy Act: ensuring the availability of isotopes for medical, industrial, and research applications; meeting the nuclear material needs of other Federal agencies (i.e., NASA); and undertaking research and development activities related to development of nuclear power for civilian use.

DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings. Section 1.2.1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, DOE recognizes that any purchase beyond what is currently available to the United States through the existing contract would likely require negotiation of a new contract and may require additional NEPA review.

It is current U.S. policy that clean, safe, reliable nuclear power continue as a viable component of the United States' energy portfolio. In recognition of this need, the U.S. has initiated nuclear energy research and development programs to address potential long-term barriers to expanded use of nuclear power (e.g., nuclear waste, proliferation, safety, and economics) and to ensure that current nuclear power plants can continue to deliver adequate and affordable energy supplies. An expanded DOE nuclear facility infrastructure is required to support such nuclear energy research and development for civilian applications.

**2019-159:** DOE notes the commentor's opinion that the cost of indefinitely maintaining FFTF in standby mode is unacceptable. As stated in the Notice of Intent (65 FR 50064), one of the purposes of the proposed action is to determine the future role of FFTF in support of the expanded nuclear energy research and development and isotope production missions.

**2019-160:** A discussion of DOE's decisionmaking procedures is contained in response to comment no. 2019-139. This NI PEIS provides an adequate bounding description of nuclear energy research and development for civilian applications which DOE is responsible for supporting under the Atomic Energy Act. Appendix D of the NI PEIS specifically provides a summary of the nuclear energy research and development which could be accomplished in FFTF in overall support of the DOE missions.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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DOE provided the Summary concurrent with distribution of the Draft and Final NI PEIS as required by CEQ regulations for implementing NEPA (40 CFR 1502.12). The Summary and Draft NI PEIS were distributed well in advance of the 15 days prior to the public hearings that is specified by CEQ regulations (40 CFR 1506.6). Also, the Summary and Draft were mailed starting one week prior to the start of the public comment period on July 28, 2000.

**2019-161:** DOE notes the commentor's support for Alternative 1, Restart FFTF.

**2019-162:** An alternative which involves acquisition of material from foreign sources, such as suggested by the commentor, would fail to meet the goal of the proposed action, which is to accomplish expanded civilian nuclear energy research and development and isotope production missions in the United States. It should be noted that the No Action Alternative does consider the purchase of plutonium-238 from Russia and that the United States currently purchases approximately 90 percent of its medical radioisotopes from foreign producers, most notably Canada.

**2019-163:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

**2019-164:** DOE notes the commentor's support for Alternative 1, Restart FFTF. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram funds designated for Hanford cleanup, regardless of the alternative(s) selected.

**2019-165:** All environmental parameters (e.g. air, soil, surface water, groundwater, vegetation, animals, fish, etc.) in and around the Hanford Site are monitored on a set frequency. The information is available to the public in annual environmental monitoring reports.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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The management of the FFTF Facility has been retained through contractor changeovers, and the qualifications of the FFTF management are excellent.

- 2019-166:** The costs of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such an ancillary document need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed this document to about 730 interested parties on August 24, 2000. The report was made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided a summary of the Cost Report in Appendix P in the Final NI PEIS. NEPA does not require that cost-benefit analyses be provided in an EIS, and none have been provided in this Final NI PEIS or in the Cost Report. The Cost Report is not a cost-benefit analysis. While it is reasonable to believe that the benefits of medical isotopes are substantial, the purpose of this NI PEIS is to describe the nuclear infrastructure missions (Section 1.2 of Volume 1), a range of reasonable alternatives for satisfying the mission requirements (Section 2.5 of Volume 1), and the environmental impacts that would result from implementation of the alternatives. According to 40 CFR Section 1502.23, if a cost-benefit analysis exists, it must be reported and summarized in the NI PEIS.
- 2019-167:** DOE notes the commentor's support for medical and research isotope production and opposition to plutonium-238 production for space missions.
- 2019-168:** The NI PEIS was not structured to separately determine the environmental impacts of each DOE mission within each alternative, rather it sought to identify the overall impacts of each alternative or option. In order to do this impacts were identified for each facility regardless of the number of missions that might take place in that facility. Thus, for HFIR or ATR only one mission was analyzed (plutonium-238 production) whereas for FFTF all three mission were addressed.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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If the facility (it is assumed that the commentor is referring to FFTF) is restarted, it would be used for the production of plutonium-238, medical/research isotopes, and for nuclear energy research and development for civilian application. While FFTF could be utilized to some extent by foreign researchers (as are other DOE research reactors), these would not be its primary users.

- 2019-169:** The costs of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such an ancillary document need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed this document to about 730 interested parties on August 24, 2000. The report was made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided a summary of the Cost Report in Appendix P in the Final NI PEIS.
- 2019-170:** DOE notes the commentor's support for producing plutonium-238 in the United States rather than purchasing it from Russia.
- 2019-171:** DOE notes the commentor's views regarding opposition to Alternative 1 options, Restart FFTF. DOE is aware that there is a considerable difference of public opinion regarding the alternatives evaluated in this NI PEIS to accomplish the DOE missions, including direct support as well as opposition to Alternative 1, Restart FFTF. In compliance with NEPA and CEQ regulations, DOE provided opportunity to the public to comment on the environmental impact analysis of DOE's proposed alternatives for meeting the mission requirements, and gave equal consideration to all comments, regardless of how or where they were received. All comments received during the public comment period have been responded to in this NI PEIS. While the number of comments for or against a particular alternative may be recorded, it does not automatically constitute a "vote" for or against the alternative.
- 2019-172:** A previous change to the Tri-Party Agreement (TPA) removed the planned milestone for deactivation of the FFTF until its ultimate fate was assessed. That proposed TPA milestone change was the subject of previous public meetings and approved by the U.S. Environmental Protection Agency and the State of Washington Department of Ecology. DOE is fully committed to honoring this agreement.



***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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- 2019-173:** The costs of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such an ancillary document need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed this document to about 730 interested parties on August 24, 2000. The report was made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided a summary of the Cost Report in Appendix P in the Final NI PEIS.
- 2019-174:** Any foreign country fuel, after its use in the operation of FFTF would be under the custody of the U.S. Department of Energy, and will be managed and disposed of in accordance with U.S. standards. The spent nuclear fuel management is discussed in Section 4.3.1.1.14 of the NI PEIS.
- 2019-175:** Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. DOE bases its planning for plutonium-238 requirements for space missions on NASA estimations, not on past funding. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, DOE recognizes that any purchase beyond what is currently available to the United States through the existing contract would likely require negotiation of a new contract and may require additional NEPA review.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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**2019-176:** The methods for calculating transportation risks are discussed in Appendix J of the NI PEIS. Following is a discussion of the methods and approach used for these calculations.

The RADTRAN 5 (Neuhauser and Kanipe, 2000) computer code was used for incident-free and accident risk assessments to estimate the impacts on population. RADTRAN 5 contains the mathematical models needed to calculate the incident free and accident risk of transporting radioactive materials. For accident analysis, RADTRAN 5 calculates distinct probability-consequence products for multiple exposure pathways for each accident severity category for all route segments. The RADTRAN 5 accident consequence assessment models were used to provide an estimate of the potential impacts posed by the maximum foreseeable (1 X 10<sup>-7</sup> per year or once in 10 million year) transportation accident. As discussed in sections J.4 and J.6.1, RADTRAN 5 also takes into account the risk of accidents with frequencies that are less than 1 X 10<sup>-7</sup> per year and this risk is included in the NI PEIS risk analysis results.

**2019-177:** DOE notes the commentor's interest in alternative energy sources, although issues of research and development of alternative energy sources are beyond the scope of this Nuclear Infrastructure PEIS. The DOE missions to be addressed in this EIS, which include the production of medical and industrial isotopes, the production of plutonium-238, and civilian nuclear energy research and development, can currently only be met using nuclear reactor or accelerator technologies.

**2019-178:** The schedule for the public hearings was determined in part by CEQ guidelines for implementing NEPA that require that the hearings be held no sooner than 15 days after release of the Draft NI PEIS. DOE is committed to providing the public with comprehensive environmental reviews of its proposed actions in accordance with NEPA, and holding public hearings is an essential and required part of the NEPA process. In compliance with NEPA and CEQ regulations, DOE provided opportunity for the public to comment on the scope of the NI PEIS and the environmental impact analysis of DOE's proposed alternatives. DOE gave equal consideration to all comments. In preparing the Final NI PEIS, DOE carefully considered comments received from the public.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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CEQ (40 CFR 1500 et seq.) and DOE (10 CFR Part 1021) implementation regulations do not require inclusion of cost and nonproliferation studies in an environmental impact statement. The basic purpose of the NI PEIS is to describe the alternatives under consideration for implementation (Section 2.5 of Volume 1) and the environmental impacts that would occur if these alternatives were implemented (Chapter 4 of Volume 1). Pursuant to CEQ regulations (40 CFR 1505.1(e)), agencies are encouraged to make ancillary decision documents available to the public before a decision is made. The associated cost report and nonproliferation report were made available to the public on August 24, 2000 and September 8, 2000, respectively. DOE mailed these documents to approximately 730 interested parties, and these reports were made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in public reading rooms.

DOE has also provided summaries of the Cost Report and Nuclear Infrastructure Nonproliferation Impact Assessment in Appendixes P and Q, respectively, in the Final NI PEIS.

As outlined in 40 CFR 1502.14 (e), an agency is not required to specify a preferred alternative or alternatives in the Draft EIS if one does not exist, but must do so in the Final EIS. Accordingly, DOE has identified its preferred alternative in Volume 1, Section 2.8 of the Final NI PEIS.

**2019-179:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

DOE also notes the commentor's suggestion concerning radiation research.

**2019-180:** DOE notes the commentor's concern that the missions described in the NI PEIS do not support restarting the FFTF. Other than the missions discussed in the NI PEIS, no alternate uses for FFTF are being

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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considered at this time. None of the alternatives in the NI PEIS include defense missions and would not contribute to future weapons production. Any other use of FFTF beyond what is described and evaluated in the Final NI PEIS would require additional NEPA assessment.

**2019-181:** See response to comment 2019/98. With respect to previous commitments to deactivate FFTF, a change to the Tri-Party Agreement (TPA) removed the planned milestone for total deactivation of the FFTF until its ultimate fate was assessed. That proposed TPA milestone change was the subject of previous public meetings.

**2019-182:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

Both government and commercial waste disposal sites are operated within the Hanford Site. These are permitted by the State of Washington.

**2019-183:** See response to comment 2019/98. DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site.

**2019-184:** FFTF is approximately 4.5 miles from the Columbia River. There are no discharges to the river from FFTF and no radioactive or hazardous discharges to groundwater. As indicated in analyses presented in Chapter 4 of Volume 1 (e.g., Sections 4.3.1.1.4, 4.3.3.1.4, 4.4.3.1.4, 4.5.3.2.4, and 4.6.3.2.4), there would be no discernible impacts to

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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groundwater or surface water quality at Hanford from operation of Hanford facilities that would support the nuclear infrastructure missions described in Section 1.2 of Volume 1.

**2019-185:** In addition to the FFTF, other facilities within the United States (i.e., those that are currently operating, could be brought on line, or that could be constructed and operated) were assessed as reasonable alternatives in the PEIS.

DOE could continue to purchase plutonium-238 from Russia to satisfy its responsibility to supply NASA with the necessary fuel to support future space exploration missions. Under the current contract set to expire in 2002, the United States is authorized to purchase up to 40 kilograms of plutonium-238, with the total available for purchase in any one year limited to 10 kilograms. However, DOE does not stockpile large quantities of Russian plutonium-238 long in advance of needs due to budget constraints and the additional processing required to remove decay products that occur following extended storage of the material. To date, DOE has purchased approximately 9 kilograms of plutonium-238 under this contract. Future purchases from Russia would require the negotiation of a new contract with Russia. DOE recognizes that this is a viable option and has analyzed this option under the No Action Alternative.

**2019-186:** The purchase of plutonium-238 from Russia is considered in the No Action Alternative. Options 4-6 of Alternative 2, Use Only Existing Operational Facilities, considers the use of existing CLWRs to produce plutonium-238. It is not practical to produce medical or research isotopes in a commercial reactor and at the same time efficiently manage it for power production.

**2019-187:** The NI PEIS addresses the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed action for all alternatives and alternative options. Waste treatment, storage, and disposal facilities for the wastes expected to be generated are identified in Chapter 4 under the Waste Management sections of the NI PEIS. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.

The NI PEIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada, would be the final disposal site for DOE's high level radioactive waste and spent nuclear fuel. As directed by the U.S. Congress through the Nuclear Waste Policy Act, as amended, Yucca Mountain is the only candidate site currently being characterized as a potential geologic repository for high-level radioactive waste and spent nuclear fuel. DOE has prepared a separate EIS, "Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada" (DOE/EIS-0250D, July 1999), which analyzes the environmental impacts from construction, operation and monitoring, related transportation, and eventual closure of a potential geological repository.

**2019-188:** DOE was tasked by Congress in the Atomic Energy Act of 1954, as amended, to "ensure the availability of isotopes for medical, industrial, and research applications, meeting the nuclear material needs of other federal agencies, and undertaking research and development of activities related to development of nuclear power for civilian use." The purpose of this PEIS is to determine the environmental and other impacts to accomplishing this mission from all reasonable existing and new DOE resources. The FFTF at the Hanford Site was one of several existing DOE resources that was assessed for this mission.

DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram funds designated for Hanford cleanup, regardless of the alternative(s) selected.

**2019-189:** See response to comment 2019-98.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

---

***Response to Commentor No. 2019***

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**2019-190:** DOE notes the commentor's views and concern. The United States balance of payments in the world economy is not within the scope of the NI PEIS.

**2019-191:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

Hanford tank waste issues are not within the scope of this PEIS, as none of the alternatives considered would add to these waste volumes.

**2019-192:** NASA establishes the need and requirements for space missions and undergoes a thorough NEPA evaluation for each launch. Plutonium-238 sources are used only when required by the space mission or enhance mission capabilities.

**2019-193:** DOE notes the commentor's remarks concerning the public involvement effort sponsored by the Oregon Office of Energy and for the outcome of public opinion in the decisions to be made.

**2019-194:** DOE notes the commentor's concern with FFTF waste. As identified in Section 4.3.1.1.13 of the NI PEIS, the restart of FFTF would generate about 63 cubic meters of additional radioactive waste (e.g., solid low level radioactive waste) annually, in addition to nonhazardous wastes. This would account for about 2,205 cubic meters of additional radioactive waste to be generated over the 35-year period of nuclear infrastructure operations and is small in comparison to the waste generated by current Hanford activities. It is DOE's policy that all wastes be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed actions for all alternatives and alternative options. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision.

FFTF spent nuclear fuel is currently stored onsite safely in 50 year dry cask storage containers.

**2019-195:** The NI PEIS is adequate. This NI PEIS has been prepared in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR Parts 1500 through 1508 and 10 CFR Part 1021), respectively. The environmental impacts of reasonable alternatives to fulfill the requirements of the missions were disclosed and evaluated in the NI PEIS.

The costs and nuclear nonproliferation impacts of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report and Nuclear Infrastructure Nonproliferation Impact Assessment to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such ancillary documents need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed these documents to more than 730 interested parties on August 24 and September 8, 2000, respectively. Both reports were made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided summaries of the Cost Report and Nuclear Infrastructure Nonproliferation Impact Assessment in Appendixes P and Q, respectively, in the Final NI PEIS.

The purpose of this NI PEIS is to evaluate the environmental impacts of reasonable alternatives to fulfill the requirements of the DOE missions, which include the production of medical and industrial isotopes, the production of plutonium-238 for NASA space missions, and civilian nuclear energy research and development. As evaluated under Alternative 1 in this NI PEIS, FFTF would be restarted to



***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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accomplish these nondefense-related missions. All missions considered in the NI PEIS are for civilian purposes.

- 2019-196:** FFTF can be safely operated to support the nuclear infrastructure missions described in Section 1.2 of Volume 1. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1, including normal operations and a spectrum of accidents that included severe accidents. The accident analysis included a review of internal events (e.g., equipment failures, human errors), external events (e.g., airplane crashes, nearby explosions, fires), natural phenomena (e.g., floods, tornadoes, earthquakes), common-cause events, and sabotage and terrorist activities. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small.
- 2019-197:** The purpose of the NI PEIS is not to subsidize the nuclear industry. Rather, DOE is proposing a nuclear infrastructure enhancement for the purposes of addressing three primary needs:
- 1) to support the increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;
  - 2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and for which the U.S. has no long-term, assured supply; and
  - 3) to support civilian nuclear energy research and development in order to maintain the clean, safe, and reliable use of nuclear power as a viable component of the United States' energy portfolio.
- 2019-198:** DOE notes the commentor's concern regarding the funding for cleanups. Use of any of these facilities for the stated missions would not impact the schedule or available funding for existing cleanup activities.
- 2019-199:** DOE notes the commentor's concerns. This NI PEIS has been prepared in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR Parts 1500 through 1508 and 10 CFR Part 1021), respectively.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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DOE evaluated each environmental resource area in a consistent, unbiased manner across all the alternatives to allow a fair comparison among the various alternatives. DOE policy encourages effective public participation in its decisionmaking process. In compliance with NEPA and CEQ regulations, DOE provided opportunity to the public to comment on the scope of the NI PEIS and the environmental impact analysis of DOE's proposed alternatives. DOE gave equal consideration to all comments. In preparing the Final NI PEIS, DOE carefully considered comments received from the public.

**2019-200:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

DOE notes the commentor's opposition to new waste generation. As identified in Section 4.3.1.1.13 of the NI PEIS, the restart of FFTF would generate about 63 cubic meters of additional radioactive waste (e.g., solid low-level radioactive waste) annually, in addition to nonhazardous wastes. This would account for about 2,205 cubic meters of additional radioactive waste to be generated over the 35-year period of nuclear infrastructure operations and is small in comparison to the waste generated by current Hanford activities. It is DOE's policy that all wastes be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.

**2019-201:** The purpose of the NI PEIS is to evaluate the potential environmental impacts associated with the enhancement of DOE's nuclear infrastructure to fulfill three missions. Under the authority of the Atomic Energy Act, DOE is responsible for ensuring the availability of

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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isotopes for medical, industrial, and research applications; meeting the nuclear material needs of other Federal agencies (i.e., NASA); and undertaking research and development activities related to development of nuclear power for civilian use.

DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings. Section 1.2.1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, DOE recognizes that any purchase beyond

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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what is currently available to the United States through the existing contract would likely require negotiation of a new contract and may require additional NEPA review.

It is current U.S. policy that clean, safe, reliable nuclear power continue as a viable component of the United States' energy portfolio. In recognition of this need, the U.S. has initiated nuclear energy research and development programs to address potential long-term barriers to expanded use of nuclear power (e.g., nuclear waste, proliferation, safety, and economics) and to ensure that current nuclear power plants can continue to deliver adequate and affordable energy supplies. An enhanced DOE nuclear facility infrastructure is required to support such nuclear energy research and development for civilian applications.

**2019-202:** DOE notes the commentor's concerns about the inclusion of cost in the NI PEIS and analysis of alternatives in the decisionmaking process. The costs of proposed actions are not required by NEPA and CEQ regulations to be included in a PEIS. DOE prepared a separate Cost Report to provide additional pertinent information to the Secretary of Energy so that he may make an informed decision with respect to the alternatives presented in the NI PEIS. Such an ancillary document need only be made available to the public prior to any decision being made under CEQ regulations (40 CFR Part 1505.1(e)). Nevertheless, DOE mailed this document to about 730 interested parties on August 24, 2000. The report was made available immediately upon release on the NE web site (<http://www.nuclear.gov>) and in the public reading rooms. DOE has also provided a summary of the Cost Report in Appendix P in the Final NI PEIS.

In accordance with NEPA and CEQ regulations, this NI PEIS analyzes a range of reasonable alternatives for accomplishing the DOE missions which include the production of medical and industrial isotopes, the production of plutonium-238 for NASA space missions, and civilian nuclear energy research and development.

**2019-203:** The PEIS includes a detailed examination the socioeconomic impacts of the Region of Influence, which is the area in which 90 percent of the Hanford workers live, to determine the impacts on population, housing, and public services. For Hanford, the Region of Influence is defined as Benton and Franklin counties. It also includes a broader examination of the Regional Economic Area, defined as those counties that will be

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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economically impacted by actions at the Hanford site. The Regional Economic Area is comprised of Adams, Benton, Chelan, Douglas, Franklin, Grant, Kittitas, Okanogan, and Yakima counties. See Appendix G for an in-depth discussion of the impact assessment method.

**2019-204:** The fabrication and processing of the target materials were considered in the development of the risks associated with each of the alternatives. Fabrication and processing activities were analyzed for several different facilities, including Fuels and Materials Examination Facility (FMEF), Fluorinel Dissolution Process Facility (FDPF), Radiochemical Engineering Development Center (REDC), Radiochemical Processing Laboratory (RPL), and a generic processing facility. In all cases the processing (versus fabrication) of the irradiated targets is the dominant contributor to both worker and population health impacts. The fabrication of unirradiated targets results in essentially no radiological consequences. The health impacts from processing the irradiated targets are included in the information provided for each alternative where needed. For example Section 4.3.1.1.9 includes information on the health impacts from normal operation for both REDC and RPL; Section 4.3.2.1.9 for FDPF and RPL, Section 4.3.3.1.9 for FMEF, and Section 4.5.1.1.9 for a generic support (processing) facility. Similar information is provided for a processing facility for each of the options in alternatives 2, 3, and 4. (Processing of targets does not occur in Alternatives 1 and 5.)

**2019-205:** The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed action for all alternatives and alternative options. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders. The action to be addressed in this NI PEIS, which include the production of medical and industrial isotopes, the production of plutonium-238, and civilian nuclear energy research and development, can currently only be met using nuclear reactor or accelerator technologies.

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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**2019-206:** DOE notes the commentor's concerns regarding the existing cleanup mission at Hanford. Although beyond the scope of this NI PEIS, ongoing Hanford cleanup activities are high priority to DOE. Hanford Site environmental restoration activities are conducted in accordance with the Tri-Party Agreement (i.e., Washington State Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy). This agreement specifies milestones and schedules for restoration of all parts of the Hanford Site. DOE is fully committed to honoring this agreement. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.

FFTF can be safely operated to support the nuclear infrastructure missions described in Section 1.2 of Volume 1. Section 4.3 of Volume 1 provides the results of the evaluation of potential health impacts that would be expected to result from implementation of Alternative 1, including normal operations and a spectrum of accidents that included severe accidents. The environmental analysis showed that radiological and nonradiological risks associated with restarting FFTF would be small.

**2019-207:** See response to comment 2019-126. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram funds designated for Hanford cleanup, regardless of the alternative(s) selected.

**2019-208:** Consistent with its mandates under the Atomic Energy Act, DOE is proposing this enhancement for the purposes of addressing three primary needs:

- 1) to support the increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;
- 2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and for which the U.S. has no long-term, assured supply; and

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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3) to support civilian nuclear energy research and development in order to maintain the clean, safe, and reliable use of nuclear power as a viable component of the United States' energy portfolio.

DOE has sought independent analysis of trends in the use of medical isotopes, and of its continuing role in this sector, consistent with its mandates under the Atomic Energy Act. In doing so, it established two expert bodies, the Expert Panel and the NERAC. In 1998, the Expert Panel, which convened to forecast future demand for medical isotopes, estimated that the expected growth rate of medical isotope use during the next 20 years would range from 7 to 14 percent per year for therapeutic applications, and 7 to 16 percent per year for diagnostic applications. These findings were later reviewed and endorsed by NERAC, established in 1999 to provide DOE with expert, objective advice regarding the future form of its isotope research and production activities. DOE has adopted these growth projections as a planning tool for evaluating the potential capability of the existing nuclear facility infrastructure to meet programmatic requirements. In the period since the initial estimates were made, the actual rate of growth of medical isotope use is consistent with the Expert Panel findings. Section 1.2.1 was revised to incorporate this information and to clarify DOE's role in fulfilling the U.S. research and commercial isotope production needs.

Through a Memorandum of Understanding with NASA, DOE provides radioisotope power systems, and the plutonium-238 that fuels them, for space missions that require or would be enhanced by their use. In addition, under the National Space Policy issued by the Office of Science and Technology Policy in September 1996, and consistent with DOE's charter under the Atomic Energy Act, DOE is responsible for maintaining the capability to provide the plutonium-238 needed to support these missions. There are approximately 9 kilograms (19.8 pounds) of plutonium-238 in the U.S. inventory available to support future NASA space missions. Based on NASA guidance to DOE on the potential use of radioisotope power systems for upcoming space missions, it is anticipated that the existing plutonium-238 inventory will be exhausted by approximately 2005. Under the No Action Alternative, DOE would continue to purchase plutonium-238 to meet the space mission needs for the 35-year evaluation period considered in the NI PEIS. However, DOE recognizes that any purchase beyond what is currently available to the United States through the existing

***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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contract would likely require negotiation of a new contract and may require additional NEPA review.

It is current U.S. policy that clean, safe, reliable nuclear power continue as a viable component of the United States' energy portfolio. In recognition of this need, the U.S. has initiated nuclear energy research and development programs to address potential long-term barriers to expanded use of nuclear power (e.g., nuclear waste, proliferation, safety, and economics) and to ensure that current nuclear power plants can continue to deliver adequate and affordable energy supplies. An enhanced DOE nuclear facility infrastructure is required to support such nuclear energy research and development for civilian applications.

**2019-209:** Consistent with its mandates under the Atomic Energy Act, DOE is proposing this enhancement for the purposes of addressing three primary needs:

- 1) to support the increased domestic production of isotopes for medical, research, and industrial uses, as initially identified by a panel of experts in the medical field and reaffirmed by the Nuclear Energy Research Advisory Committee;
- 2) to support future NASA space exploration missions by re-establishing a domestic capability to produce plutonium-238, a fuel source that is required for deep space missions and for which the U.S. has no long-term, assured supply; and
- 3) to support civilian nuclear energy research and development.

It is current U.S. policy that clean, safe, reliable nuclear power continue as a viable component of the United States' energy portfolio. In recognition of this need, the U.S. has initiated nuclear energy research and development programs to address potential long-term barriers to expanded use of nuclear power (e.g., nuclear waste, proliferation, safety, and economics) and to ensure that current nuclear power plants can continue to deliver adequate and affordable energy supplies. An enhanced DOE nuclear facility infrastructure is required to support such nuclear energy research and development for civilian applications.

**2019-210:** The NI PEIS addressed the environmental impacts due to the treatment, storage, and disposal of the waste generated by the proposed action for all alternatives and alternative options. Waste treatment, storage, and



***Commentor No. 2019: Mary Lou Blazek (Cont'd)***  
***Oregon Office of Energy***

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***Response to Commentor No. 2019***

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disposal facilities for the wastes expected to be generated are identified in Chapter 4 under the Waste Management sections of the NI PEIS. The cumulative impact tables for waste management in Section 4.8 of the NI PEIS have been revised to include the individual site's storage, treatment and disposal capacities for comparison. Waste minimization programs at each of the proposed sites are also addressed. These programs will be implemented for the alternative selected in the Record of Decision. The waste generated from any of the proposed alternatives in the NI PEIS will be managed (i.e., treated, stored and disposed) in a safe and environmentally protective manner and in compliance with all applicable Federal and state laws and regulations and applicable DOE orders.

The NI PEIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada, would be the final disposal site for DOE's high level radioactive waste and spent nuclear fuel. As directed by the U.S. Congress through the Nuclear Waste Policy Act, as amended, Yucca Mountain is the only candidate site currently being characterized as a potential geologic repository for high-level radioactive waste and spent nuclear fuel. DOE has prepared a separate EIS, "Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada" (DOE/EIS-0250D, July 1999), which analyzes the environmental impacts from construction, operation and monitoring related transportation, and eventual closure of a potential geological repository.

**2019-211:** DOE notes the commentor's opinions and concern for funding of the Hanford cleanup. The U.S. Congress funds the Hanford cleanup through the Office of the Assistant Secretary for Environmental Management (EM), and the FFTF through the Office of Nuclear Energy, Science and Technology (NE). The nuclear infrastructure missions described in Section 1.2 of Volume 1 would also be funded by NE, which has no funding connection to Hanford cleanup activities. As stated in Section N.3.2, implementation of the nuclear infrastructure alternatives would not divert or reprogram budgeted funds designated for Hanford cleanup, regardless of the alternative(s) selected.